DOCUMENT RESUME

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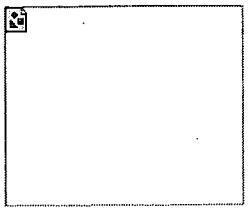
IDENTIFIERS	*Technology Integration; *Technology Utilization

ABSTRACT

Presentations at this conference addressed the following topics related to instructional technology: (1) the community of learning, including students' roles in the technology revolution, how technology-based tools enhance collaborative learning, community outreach through technology, and legal issues involving intellectual property/copyright; (2) course delivery for the new millennium, including online learning, satellite or instructional television, compressed video, technology integration, use/evaluation of online course software, adaptive technology, online corporate training, online constructivist learning, and asynchronous/synchronous tools and approaches; (3) supporting instructional technology, including developing faculty mentoring programs, establishing an instructional technology center, providing technical support, and the role of technology in faculty development, promotion, and tenure; (4) pedagogy and technology integration, including the basics of teaching learning, adapting teaching to different learning styles, curricular change/development, resources for new styles of learning, developing tools for specific knowledge domains, and courseware tool design and/or application; (5) best practices, including case studies on using technology in the classroom, transitions from traditional to online learning, World Wide Web-enhanced classrooms, online courses, library/information technology centers; and (6) on the horizon, including the application of emerging technologies, instructional technology trends, instructional planning for new technologies, dealing with issues that arise because of the addition of online classes, and diffusion of technology within educational communities. This proceedings contains 24 papers and two workshop summaries. (MES)

Proceeding of the Mid-South Instructional Technology Conference (Murfreesboro, Tennessee April 9th-11th, 2000

2000 Mid-South Instructional Technology Conference



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		Sunday, April 9, 2000	
5:00-8:00	Garden Plaza	Early Registration	
6:00-8:00	Garden Plaza	Welcome Reception and Entertainment	
		Monday, April 10, 2000	
7:30-Noon	KUC Lobby	Registration	
7:30-8:15	KUC Lobby	Continental Breakfast	
8:15 - 9:30	KUC Theatre	**Featured Speaker** - Dancing with the Devil: Information Technology and the New Competition in Higher Education (Katz)	
9:00 - 3:00	KUC 324	Vendor Displays	
9:30-9:50	KUC 312 & 324	Break	
9:50-Noon		**Concurrent Sessions** ****Please note**** Sessions are scheduled for 30, 60, 90, or 120 minutes.	
9:50-10:50	KUC 318	Andragogy and Technology: Integrating Adult Learning Theory As We Teach With Technology (Fidishun)	Track 4
9:50-10:50	KUC 314	Influences and Barriers to the Adoption of Instructional Technology (Beggs)	Track 6
9:50-10:50	KUC 316	Faculty Issues in Distance Learning: A Case Study of the Kentucky Commonwealth Virtual University (Hatcher, Keedy, Kuhlenschmidt, Wilson)	Track 3
9:50-10:50	KUC 305	American History II Revisited: A Two-Year Retrospective (Easley, Hoffman)	Track 4

9:50-10:50	KUC 313	A Collaborative Research and Discussion Exercise for a CAI Environment (Kates)	Track 5
9:50-11:20	KUC Theatre	Key Elements for an Effective Online Learning Program: Lessons Learned (Melichar)	Track 2
9:50-11:20	KUC 322	Really Using the Web for Learning and Teaching in Higher Education (Bazillion, Braun, Matter, Murphy, Pevas, Svingen)	Track 5
11:00-11:30	KUC 316	Instructional Technology Adoption at UTK: Bringing it Full-Circle (Derco)	Track 3
11:00-11:30	KUC 305	Emerging Technology and the Evolution of a Humanties Course (Jordan, McCoy)	Track 5
11:00-Noon	KUC 318	Catering to Students Taking an Online Course for the First Time (Pierce, Shelton)	Track 4
11:00-Noon	KUC 314	Integrating Technology into the Classroom (Thoms)	Track 6
11:00-Noon	KUC 313	Web-Based Course Software for an Online Introductory Psychology Course (Kinney)	Track 2
11:30-Noon	KUC Theatre	Education at a Distance Using Compressed Video: Lessons Learned (Carter, Chataginer, Morgan, Rutz)	Track 2
11:30-Noon	KUC 316	HRD Online Gateway (First Stop for Online Instructors and Learners) (Hite)	Track 3
11:30-Noon	KUC 305	Introduction to Music Theory and Aural Skills: A Study in Developing an Interactive Music Learning Environment for the Internet (Steffa)	Track 5
		Workshops **Limited	

9:50 - Noon		**Seating**** Sign up for workshops at conference registration desk	
9:50-Noon	LRC A	Animations for the Web and Multimedia Applications (Bardonner, Ward, Wiley)	Track 4
9:50-Noon	LRC B	Building a Supportive Online Instructional Environment for Reluctant, Apprehensive, and/or Under Prepared Learners (Jansak)	Track 5
9:50-Noon	TTC	New Web Publishing Features of Microsoft Office 2000 (Kerr)	Track 2
Noon-1:15	**JUB - TN Room**	**Lunch**	
1:15-2:15		**Concurrent Track Sessions**	
1:15-2:15	KUC Theatre	Web Camp: A Faculty Development Opportunity (Braun)	Track 2
1:15-2:15	KUC 322	Preparing Mississippi's Future Teachers To Use Technology (Luce, Malone, Mann)	Track 4
1:15-2:15	KUC 318	Using the Web to Enhance Mathematical Instruction (Brien, Lucas)	Track 4
1:15-2:15	KUC 314	(Nearly) Free and (Really) Educational Programming for Your Cable TV Channel (Johnson)	Track 1
1:15-2:15	KUC 313	Case Study: Using Information Technology at ETSU (Price)	Track 5
2:15-2:35	**KUC 312 & 324**	**Break**	
2:35-4:45		**Concurrent Sessions** **Please Note**** Sessions are scheduled for 30, 60, 90, or 120 minutes	
2:35-3:35	KUC 322	Integrating the Real World into Cyber Learning (Hite, Smith, Stout)	Track 5

2:35-3:35	KUC 316	Illuminating Instructional Technology Support: Spotlight on Faculty Instructional Technology Design, Development, and Delivery (Runyon)	Track 3
2:35-3:35	KUC 305	Honors Tech: Integration of Intstructional Technology in an Honors Biology Course (Barlow, Kerr)	Track 5
2:35-3:35	KUC 313	Streaming PowerPoint and Images on the Internet: Putting the Internet to Work for You (Dively, Ranker)	Track 2
2:35-4:05	KUC Theatre	Taking Instruction Online(?) (Carlson, Everett)	Track 2
2:35-4:05	KUC 314	Institutionalizing Distributed Learning: Models of Practice (Darling, Sorg)	Track 6
3:45-4:15	KUC 305	The Effect of Multimedia Presentations on University Students' Class Attendance (L. Perry, T. Perry)	Track 5
3:45-4:45	KUC 322	Self-Pacing Technology Approach: The Preservice Course as a Catalyst for Learning (Sanders)	Track 5
3:45-4:45	KUC 316	Revised "Teaching Serving Learning" Institutes: Increasing Faculty Use of Instructional Technology (Rodgers, Starrett)	Track 3
3:45-4:45	KUC 313	Displaying Mathematical Expressions on the World Wide Web (Hodges)	Track 2
4:15-4:45	KUC Theatre	Innovation in Using Web-Enhancement to Teach Health Care Finance (Mendenhall, Viamontes)	Track 2
		Webagogy - The	

4:15-4:45	KUC 318	Melding of Technology with Basic Teaching and Learning (Formosa)	Track 4
4:15-4:45	KUC 314	The Associated Colleges of the South's Digital Archive of Music Classroom Resources (Gray)	Track 6
4:15-4:45	KUC 305	New Directions in Foreign Language Learning: Faculty Development at the University of South Carolina (Cooke-Plagwitz)	Track 3
2:35-4:45		**Workshops **Limited Seating** Sign up for workshops at conference registration desk**	
2:35-3:35	LRC A	Algebra, Trigonometry, and Mathematica (Brunson, Ernst)	Track 4
2:35-4:45	LRC B	On the Mark: An Electronic Editing & Grading System (Kuhlenschmidt, Mosby)	Track 4
2:35-4:45	TTC	Organizing Course Materials for Online Delivery Using Blackboard's CourseInfo (Spearman)	Track 2
3:45-4:45	LRC A	On-line Personality and Learning Style Tests (Foote, Harmon)	Track 4
7:00-9:00	**Garden Plaza**	**Banquet and Featured Speaker** - Predicting the Future: Past as Prolog or Peril? (Berger)	
		TUESDAY, April 11, 2000	
8:15-9:30	**KUC Theatre**	**Featured Speaker** - From Cup to Lip: Visualization, Infrastructure and Technology Implementation (Green)	
9:30-9:50	**KUC 312**	**Break**	
9:50-Noon		**Concurrent Sessions **Please Note**** Sessions are scheduled for 30, 60, 90, or 120	

		minutes	
9:50-10:50	KUC 324	Middle Tennessee State University's Experience in Evaluating On-line Course Management Systems (Carroll, Clayton, Colson, Craig, Draude, Gilbert, Grady, Hopper, Johnson, Lea, Vesper, Ward)	Track 2
9:50-10:50	KUC 318	Creating a Low Cost But Dynamic Telecourse (Frost)	Track 4
9:50-10:50	KUC 314	Technological Pathways to Advancing a Diversity Agenda (Morehead, Mortazavi, Tei, B. Williams, D. Williams, Wyatt)	Track 1
9:50-10:50	KUC 316	Instructional Technology and Promotion, Tenure & Merit: Development of University Guidelines (Anderson, Domazlicky, Hoffman, Loso, Roeder, Starrett, Stokes)	Track 3
9:50-10:50	KUC 313	Developing a Distance Learning Center (DiNoto)	Track 3
9:50-11:20	KUC Theatre	Time-Saving Tips for Information Gathering (Armstrong, Flanagan, Hallet)	Track 5
9:50-11:20	KUC 322	Faculty Compensation Models for Online/Distance Education (Alexander, Conrad, Fieser, Johnston)	Track 5
11:00-Noon	KUC 324	Interactive Television Pointers from Three First Time Presenters (Buckenmeyer, Kunz, Sterrett)	Track 2
11:00-Noon	KUC 318	New Classroom Technologies and the Busy Humanities Teacher (Everett)	Track 4
11:00-Noon	KUC 316	Supporting Faculty Use of Online Course Management System (Roberts, Spearman)	Track 3

11:00-Noon	KUC 305	World Wide Web Presentations: Futuristic Strategies (Sanders)	Track 5
11:30-Noon	KUC 322	Ownership of Course Materials As a Tool In Faculty Recruitment (Rayburn, Shain)	Track 1
11:30-Noon	KUC 313	Reaching for the Stars - Online Learining for Astronomy (Stringfellow)	Track 2
9:50-Noon		**Workshops **Limited Seating**** Sign up for workshops at conference registration desk	
9:50-Noon	TTC	Facilitating Online Communications Using Blackboard's CourseInfo (Little)	Track 2
Noon-1:00	**KUC Grill or JUB Food Services**	**Lunch**	

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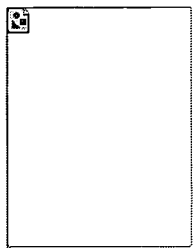

RICHARD KATZ
EDUCAUSE
Dancing with the Devil: Information Technology and the New Competition in Higher Education
Monday, April 10
8:15 a.m. - 9:30 a.m.
KUC Theatre

Information technology is cutting a path through nearly every sector of our society and economy. In particular, information technologies are making it possible for colleges and universities to deliver their missions in new and exciting ways. In their most extreme form, these technologies are making it possible to re-think core assumptions about how, where, and when instruction can occur. Many of these changes are transforming the cost structure of post-secondary instruction and are attracting new entrants to the business of higher education. New, and in many cases, proprietary providers of college and university instruction are no longer tied to traditional values and practices. They are presenting new opportunities for learners and new challenges for traditional colleges and universities.

As vice president of EDUCAUSE, Richard Katz is largely responsible for developing and delivering the association's educational program. Prior to joining the association in 1996, Katz held a variety of management and executive positions at the University of California (UC). While at UC, Katz worked as the executive director of business planning and was responsible for the nine campus design and implementation the school system's strategic management initiatives. Also while at UC, he won the Gurevich Prize, the Olsten Award, and was the second recipient of UC's Award for Innovative Management and Leadership. Along with his accomplishments, Katz is also the author, co-author or editor of more than 20 books, monographs, and articles on a variety of management and technology topics.

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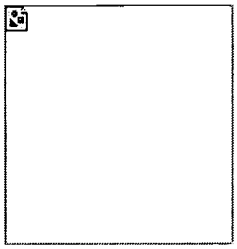

CARL BERGER
Carl Berger's Web Site
Predicting the Future: Past as Prolog or Peril?
Monday, April 10
7:00 p.m.
Garden Plaza Hotel

What could we have predicted from the use of technology five or 10 years ago. What could we have not predicted? What can we predict for five or 10 years from now? We'll explore the history of instructional technology during the past 10 years and look at exciting new technology on the frontier. By using data from students, professors, and 20 years of research about student learning using technology, we'll also predict the next World Wide Web like revolution and the natural evolution of today's WWW .

Carl Berger is a University of Michigan professor of Science and Technology Education and was the dean of the School of Education in the `80s. In 1989 he formed the Office of Instructional Technology, which grew to a 20 person, $2 million operation that won more than 15 national awards for instructional technology. Currently, Berger is the director and academic liaison in the Office of the Chief Information Officer. He is also on the board of directors for the IMS Project and the New Media Centers. Past higher education boards include Apple Computer, Zenith Data Systems, Addison Wesley and the Glen Seaborg Science Center. Berger's research indicates that design and technology can make a difference in how and when students learn. Among awards he's won for his work is the Distinguished Research Award by the National Association for Research in Science Teaching. Berger is the author of more than 30 books, and he holds two patents.

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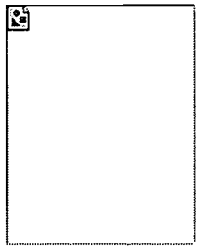

KENNETH C. GREEN
The Campus Computing Project
From Cup to Lip:
Visualization,
Infrastructure, and
Technology Implementation
Tuesday, April 11
8:15 a.m. - 9:30 a.m.
KUC Theatre

Over the past 15 years, some faculty have eagerly embraced
IT, and others have struggled with it. Many faculty engage in an
almost daily battle to find their way between what some suggest are academe's "high touch" traditions and its online, "high tech" future. They are concerned about information technology impacts and benefits, as well as, staying current with both the content and the technologies that affect their disciplines. Green's presentation will focus on the individual and institutional factors that aid or impede the migration of information technology into the classroom, syllabus, and learning experience.

Kenneth C. Green is the founder/ director of The Campus Computing Project, the largest continuing study of the role of information technology in U.S. colleges and universities. He is also a visiting scholar at The Claremont Graduate University in Claremont, California, and serves as a member of the Education Section Board of the Software Information and Industry Association (SIIA). He worked as a senior research associate and later director of The James Irvine Foundation Center for Scholarly Technology at the University of Southern California. Prior to USC, Green served for seven years as the associate director and operating officer of UCLA's Higher Education Research Institute and the American Council on Education/UCLA Cooperative Institutional Research Program. His accomplishments include work as the author/ co-author or editor of a dozen books, published research reports and three dozen articles. Green's work also includes consulting activities that focus on information technology, campus planning and policy issues, and higher education marketing.

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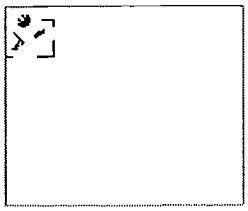

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Track 1: The Community of Learning

This track emphasizes topics such as students' roles in the technology revolution, how technology-based tools enhance collaborative learning, and community outreach through technology. Also, legal issues involving intellectual property and copyright will be addressed.

Track 2: Course Delivery for the New Millennium

This series reviews online learning, satellite or instructional TV, and compressed video. It also prepares faculty for online teaching by discussing integration of technology into the classroom and use and evaluation of online course software. Other topics covered are adaptive technology, online corporate training, constructivist learning in the online classroom, and asynchronous and synchronous tools and approaches.

Track 3: Supporting Instructional Technology

Participants are provided with information on how to understand and support instructional technology. Areas covered include developing faculty mentoring programs, establishing an IT center, and providing technical support for faculty, staff, and students. The role of technology in faculty development, promotion, and tenure will also be included.

Track 4: Pedagogy and Technology Integration

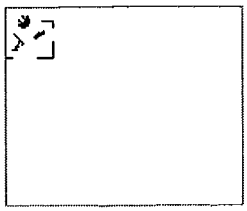
Rethinking the basics of teaching and learning, adapting teaching to different learning styles, and curricular change and development are sessions approached in this track. Participants will also learn about resources for new styles of learning, developing tools for specific knowledge domains, and courseware tool design and/or application.

Track 5: Best Practices

Sessions in this track will review individual case studies such as using technology in the classroom, transitions from traditional to online learning, Web-enhanced classrooms, online courses, library and information technology centers, and much more.

Track 6:
On the Horizon

Areas covered in this track include the application of emerging technologies and instructional technology trends. Other topics include institutional planning for new technologies, dealing with issues that arise because of the addition of online classes, and the diffusion of technology within educational communities.



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Interactive Workshops

New Web Publishing Features of Microsoft Office 2000 (Track 2)
Monday, 9:50 a.m. - Noon
TTC

New Microsoft Office 2000 features allow teachers to easily design Web sites for online courses or enhance regular classroom courses. Participants in this workshop will build a simple Web site and investigate the new web building features of Office 2000. The class will learn to publish Web sites online. New features such as interactive Web documents, broadcasting live PowerPoint presentations, exporting PowerPoint presentations to Web form, and real-time document collaboration and analysis using the Web will be investigated.
Brenda L. Kerr
Middle Tennessee State University

Animations for the Web and Multimedia Applications (Track 4)
Monday, 9:50 a.m. - Noon
LRC - A

Frequently, the graphical aspects of Web authoring and multimedia presentation are a secondary consideration. General users typically have only a cursory knowledge of graphical formats and little opportunity to create, edit, and

package visual elements for Web-based and presentation activities. Using a premier animation and rendering package, interested participants will be able to produce packaged textual animations in GIF and AVI formats and static images in JPEG and GIF formats to be used in a variety of applications, including presentation software and Internet Web pages. Web integration, bandwidth, and quality considerations will also be discussed.
Daniel K. Ward II, Steven Bardonner, and Kyle D. Wiley
Ivy Tech State College

Building a Supportive Online Instructional Environment for Reluctant, Apprehensive, and/or Under- Prepared Learners (Track 5)
Monday, 9:50 a.m. - Noon
LRC - B

Student-centered design eliminates confusion, frustration, and reluctance. This workshop will focus on site design and features that can render a site as supportive and problem free as possible. Topics include re-envisioning course architecture to achieve elegance through site design, use of linking and repetition to achieve clarity and coherence with site efficiency, serving student needs, tricks for anticipating and serving the needs of your students, building community through fostering enthusiasm and participation, encouragement of reliance on the course site, and empowering student control through choices and incentives.
Kathryn Jansak
Shawnee State University

Algebra, Trigonometry, and Mathematica (Track 4)
Monday, 2:35 - 3:35 p.m.
LRC - A

Algebra, Trigonometry, & Mathematica (AT&M) is interactive courseware for algebra and trigonometry or precalculus. AT&M is appropriate for self-paced individualized instruction, either locally or in a distance-education format, as well as for group instruction in a computer laboratory environment. A distinguishing feature of AT&M is its incorporation into the help browser feature of Mathematica. With AT&M, the student is encouraged to (and is able to) ask the question "What if...?", and find out immediately.
Barry Brunson and Claus Ernst
Western Kentucky University

On the Mark: An Electronic Editing & Grading

System (Track 4)
Monday, 2:35 - 4:45 p.m.
LRC - B

Increasingly, written work is passed to instructors or among reviewers without ever existing in hard copy. Corrections in electronic formats are logistically challenging. Until now, online editors lacked a system comparable to standard proofreader's marks for paper drafts. However, a standard system for use in marking electronic drafts has been developed. Upon completion of this workshop, participants will understand and be able to appropriately apply this simple standard system for editing and commenting on electronic documents.
Sally Kuhlenschmidt and Charmaine Mosby
Western Kentucky University

Organizing Course Materials for Online Delivery using Blackboard's CourseInfo (Track 2)
Monday, 2:35 - 4:45 p.m.
TTC

"How do I begin developing my course for online delivery with CourseInfo? Attend this hands-on workshop and find out. Participants will be guided through the process of rethinking existing materials for presentation in the CourseInfo interface. Participants will also examine file organization (online and offline), display options for materials, incorporating non-HTML documents, tips for managing materials and resources, and lessons learned from veteran users. Using a different course management system (CMS)? No problem! The strategies covered in this workshop translate to any online course delivery method
Rhonda J. Spearman
University of Tennessee, Knoxville

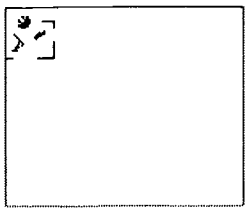
Online Personality and Learning Style Tests (Track 4)
Monday, 3:45 - 4:45 p.m.
LRC - A

By understanding personalities and learning styles, teachers are provided with advantages in conducting classroom activities. Through this hands-on workshop, participants will be introduced to a number of Internet sites that allow students and teachers to take online personality and other profile tests. Participants will receive immediate feedback after they explore up to four sites with different tests. The workshop will also discuss how such tests can

be incorporated into the classroom to understand your personality and preferred learning style, along with those of your students.
Susan K. Harmon and David. A. Foote
Middle Tennessee State University

Facilitating Online Communications Using Blackboard's CourseInfo (Track 2)
Tuesday, 9:50 a.m. - Noon
TTC

Whether preparing for your first online teaching experience, looking to enhance an existing online course, or exploring the use of telecommunication tools in face to face instruction, this online "mini-course" will provide opportunities for you to explore computer mediated communication strategies. It will also examine how to build an online learning community. You will experience synchronous "online" learning using email, discussion forum, virtual chat and whiteboard tools available in Blackboard's CourseInfo course management system (CMS). It is highly recommended that workshop registrants either participate in "Organizing Course Materials for Online Delivery using BlackBoard's CourseInfo (presented by Rhonda Spearman) before participating in this "mini-course" or have prior experience navigating CourseInfo or another course management system.
Julie K. Little
University of Tennessee, Knoxville



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WHO SHOULD EXHIBIT:

The conference welcomes companies who offer hardware and educational software, internet/Web activities, distance learning, and other products and services of interest to higher education professionals that promote the potential of enhancing teaching and learning.

LOCATION:

Middle Tennessee State University in Murfreesboro, Tennessee. Exhibits will be located in room 324 of Keathley University Center. The location will serve as a break room with a variety of food items, plus it is located within viewing distance of the presentation rooms.

DATE/TIMES:

Vendors exhibit on Monday, April 10, from 9:00 a.m. – 3:00 p.m. Booths need to be set up Sunday, April 9, from 2:00 – 4:00 p.m.

REQUIREMENTS/COST:

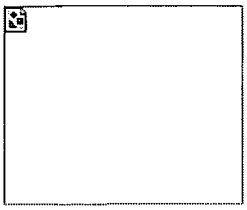
Space is provided for each vendor **free** of charge. Prior to the conference, each vendor is required to send us 500 gadget-type give-a-ways. These items will be placed in each participant's bag for distribution at registration. We also **require** that each vendor furnish a door prize to be given away during the Monday luncheon or Monday banquet.

INTERESTED:

Email us at itconf@mtsu.edu or call (615) 904-8111.

SPONSORSHIP:

If you are interested in sponsoring a meal or break, please email itconf@mtsu.edu or call (615) 904-8111.



Registration Form

One registration per form

Pre-register by March 24 Fee $95
Late Registration Fee (after March 24) $110

Hotel reservations should be made directly through the hotel by March

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ADDRESS:
CITY:
STATE:
COUNTRY:
ZIP/POSTAL CODE:
PHONE:
FAX:
E-MAIL:
URL:

Special Needs

If you have any type of special need, such as a disability or dietary requirement, please call (615) 904-8111 so that we can discuss arrangements with you.

Transportation

☐ Check here if you will need transportation between Garden Plaza an MTSU. Shuttle service is available between these locations only.

Meals and Special Events

Check below all meals and events that you plan to attend. To keep conference cost to a minimum, please check ONLY the meals and even

that you plan to attend.

☐Reception Sunday evening, April 9, at the Garden Plaza Hotel
☐Lunch Monday, April 10, on the MTSU campus
☐Banquet Monday evening, April 10, at the Garden Plaza Hotel
☐Lunch Tuesday, April 11, on the MTSU campus
☐None

Payment - Due by March 24, 2000

○Purchase Order
○Check (made payable to Middle Tennessee State University)

Credit Card Payment - Please fax or mail with signature. This is not a secure site so please do not submit card number electronically.
○Visa ○Mastercard
Amount:

Cardholder name:

Card number:

Expiration date:

Signature (required):

Form Submission

Electronic
This form may be electronically submitted if paying by PO or check. Please complete registration process by mailing PO or check to the MA address below by March 24.

Clear Registration Form

Submit Registration Form

Mail
This form may be printed and mailed to the following address:

Office of Information Technology
Attn: ITCONF
Cope 003
Middle Tennessee State University
Murfreesboro, TN 37132

Fax

This form may be printed and faxed to the following number:

(615)898-5720

Cancellation/Refund Policy

All cancellations must be submitted in writing to the address on this form Cancellations postmarked by March 24 will receive a full refund. No refunds after March 24.

Sign-Up for Workshops

Sign-up for workshops will be on a first come, first served basis at the conference registration desk:

- Sunday, April 9, 5:00 p.m.-8:00 p.m. at Garden Plaza Hotel
- Monday, April 10, and Tuesday, April 11, beginning at 7:00 a.m. at MTSU's Keathley University Center

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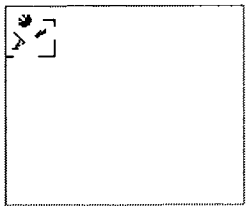
[Mid-South Instructional Technology Conference]

For internal use only---> Date rec'd_____ Entered_____Check No._____Amt Rec'd_____



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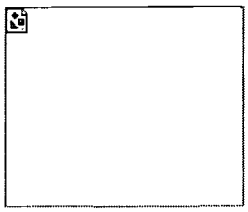
The cost of the 2000 Mid-South Instructional Technology conference is $95. This registration fee includes all conference sessions, reception, banquet, lunch on Monday and Tuesday, and a copy of the proceedings on disk. Deadline for pre-registration is March 24. After March 24, late registration is $110.

Payment method may be check, purchase order, Visa, or MasterCard. Complete and return the registration form to register.



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Hotel reservations should be made by March 8. To receive special conference rates, please let the hotel representative know that you are with the Mid-South Instructional Technology Conference when you make your reservation.

The **primary** hotel for the conference is Garden Plaza. Shuttle service from Garden Plaza to MTSU will be provided on Monday and Tuesday. The Sunday night reception and Monday night banquet are held at the Garden Plaza.

Garden Plaza Hotel
1850 Old Fort Parkway
Murfreesboro, TN 37129
(615) 895-5555
1-800-342-7336
$70.00 (single or double)

Other area hotels/motels

- Holiday Inn
  (615) 896-2420
  Hampton Inn
  (615) 896-1172
- Shuttle service is available from the Garden Plaza Hotel **ONLY**.

Please note the following:

- All rates are per room.
- All rooms must be guaranteed by credit card
- 13.25% tax per night will be added to the price of each room (8.25% Tennessee sales tax and 5% hotel tax).
- After the reservation deadline of March 8, reservations will be accepted on space-available basis.

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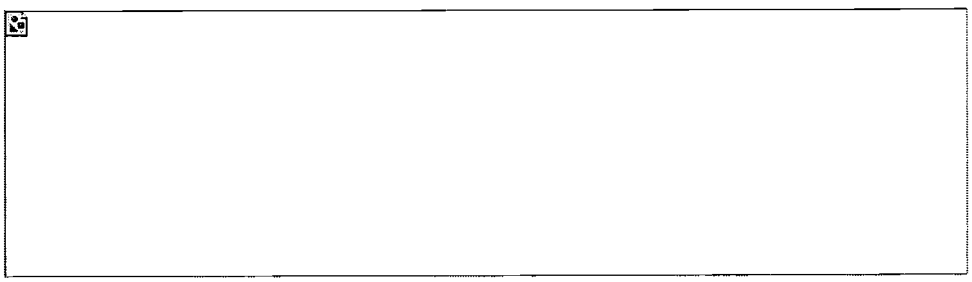
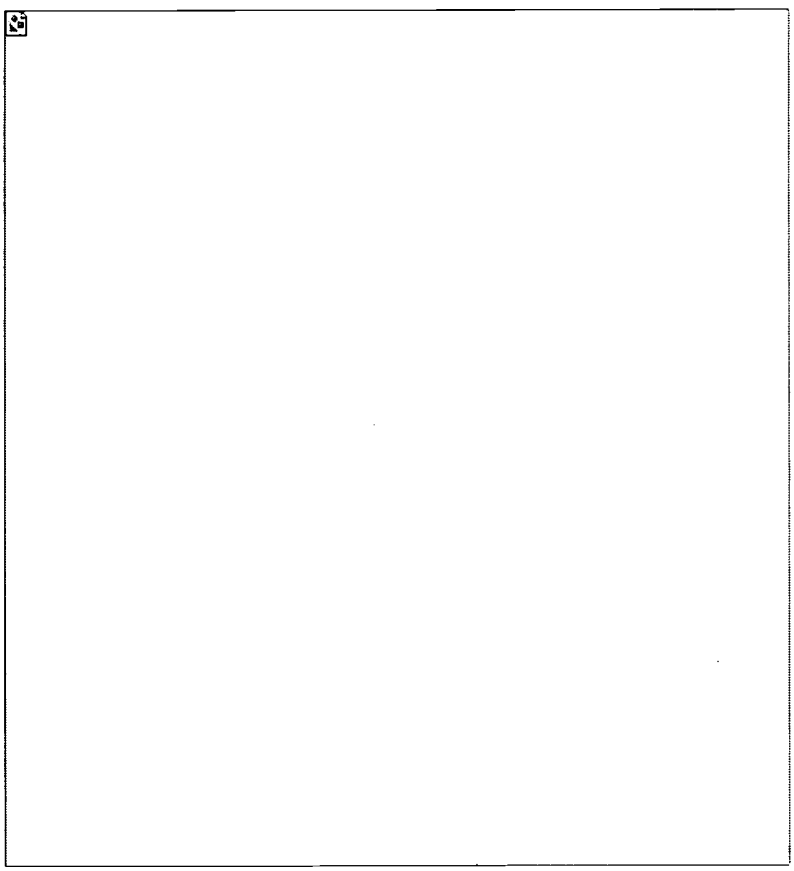
Map of Tennessee



Map of Murfreesboro



Directions to Murfreesboro and MTSU

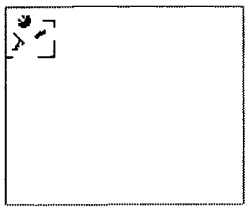
From Nashville: On I-24 East, take exit 78-B, go 3 miles. At 9th light turn right on E. Clark Blvd., proceed approximately 2 miles. Turn left onto Greenland Drive. Go through 2 traffic lights and the Livestock Parking lot will be on the right.

From Chattanooga: On I-24 West, take exit 81 and turn right onto Sanbyrn Dr. Proceed 2.9 miles; at the 6th light turn right onto Greenland Drive. Go through 2 traffic lights and the Livestock Parking lot will be on the right.

From Memphis: Take I-40 East to Nashville, then I-440 to I-24. Continue with directions from Nashville (above).

From Knoxville: Take I-40 West to Lebanon/Murfreesboro exit (2nd Lebanon exit), turn left onto Hwy. 231 South. Proceed 30 miles to Murfreesboro. At 6th light turn left on E. Clark Blvd. Continue for approximately 2 miles. Turn left onto Greenland Drive. Go through 2 traffic lights and the Livestock Parking lot will be on the right.

[Mid-South Instructional Technology Conference]



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Come to the fifth annual Mid-South Instructional Technology Conference, April 9-11, 2000, and join colleagues from across the nation to share experiences and expertise in instructional technology. The 1999 conference attracted more than 400 faculty and administrators from 22 states who enjoyed the conference's motivating and inspiring sessions as well as the convenient location, affordable cost, and friendly conference staff. Send us your proposal for a presentation, panel discussion, or workshop.

SUBMISSION INSTRUCTIONS

The following information must be included. Please format your submission using these headings in the order shown:

- Name, affiliation, and complete contact information for each participant
- Type of session:

Lecture/Presentation — presenter shares information about the session topic with participants.

Panel Discussion — moderator leads the participants through a discussion related to the session topic.

Hands-on Workshop — participants work interactively with hardware or software.

- Title of proposed session
- Preferred track
- Abstract (approx. 75 words, for publication in conference materials)
- Description (250–500 words)
- Length (presentation: 30 minutes–11/2 hours, panel discussion: 1–11/2 hours, workshop: 1–2 hours)
- Audience (general, faculty, deans/provosts, librarians, lab directors)
- Audience level (beginning, intermediate, advanced, all)
- On-site equipment requirements

Send your proposal:

Email an ASCII text file (not as an attachment) to itconf@mtsu.edu

or

Submit to the conference web site at http://www.mtsu.edu/~itconf

or

Mail an ASCII text file on a high density, double-sided, DOS format diskette to:

Office of Information Technology
Attn: ITCONF
3 Cope Administration Bldg.
Middle Tennessee State University
Murfreesboro, TN 37132

Deadline for Proposals November 1, 1999

Acceptance decisions made by November 29, 1999

Teaching and Learning
Today's Successes/Tomorrow's Horizons April 8 - 10, 2001

Sixth Annual
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itconf@mtsu.edu

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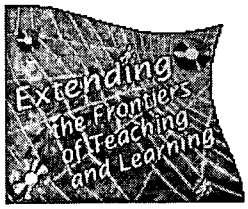

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Track Sessions

Track 1: The Community of Learning

- (Nearly) Free and (Really) Educational Programming for Your Cable TV Channel Liz Johnson, Middle Tennessee State University
- Technological Pathways to Advancing a Diversity Agenda David W. Williams, Central Michigan University
  Qumare A. Morehead, Mansour Mortazavib, Ebo Tei, Bettye Williams, and Bert L. Wyatt, University of Arkansas Pine Bluff
- Ownership of Course Materials As a Tool In Faculty Recruitment William Rayburn and Roscoe Shain, Austin Peay State University

Track 2: Course Delivery for the New Millennium

- Key Elements for an Effective Online Learning Program: Lessons Learned Kenneth E. Melichar, Piedmont
- Web Based Course Software for An Online Introductory Psychology Course Norman E. Kinney, Southeast Missouri State University
- Education at a Distance Using Compressed Video: Lessons Learned Rebecca Rutz, Alex Carter, Amy Chataginer, and Paul Morgan, Mississippi Gulf Coast Community College -Jackson County

- Web Camp: A Faculty Development Opportunity Connie L. Braun, Winona State University
- Streaming PowerPoint and Images on the Internet:
  Putting the Internet to Work for You Rich Ranker and Russ Dively, East Tennessee State University
- Taking Instruction Online? Rosemary Carlson and Donna R. Everett, Morehead State University
- Displaying Mathematical Expressions on the World Wide
  Web Charles B. Hodges, Virginia Tech
- Innovation in Using Web-enhancement to Teach Health
  Care Finance Thomas S. Mendenhall and Tracy Viamontes, University of Central Florida
- Middle Tennessee State University's Experience in
  Evaluating On-line Course Management Systems
  Barbara Draude, Lucinda Lea, Carole Carroll, Maria Clayton, Janet Colson, Dorothy Valcarcel Craig, Jackie Gilbert, Duane Graddy, Carolyn Hopper, Liz Johnson, Virginia Vesper, and Karen Ward, Middle Tennessee State University
- Interactive Television Pointers from Three First Time
  Presenters James A Buckenmyer, David A. Kunz, and Jack L. Sterrett, Southeast Missouri State University
- Reaching for the Stars- Online Learning for Astronomy Van Stringfellow, Mississippi Gulf Coast Community College Jackson County

Track 3: Supporting Instructional Technology

- Faculty Issues in Distance Learning: A Case Study of the
  Kentucky Commonwealth Virtual University Carol W. Wilson and Sally Kuhlenschmidt, Western Kentucky University, Tim Hatcher and John Keedy, University of Louisville
- Instructional Technology Adoption at UTK: Bringing it
  Full-Circle Jean A. Derco, University of Tennessee
- HRD Online Gateway (First Stop for Online Instructors
  and Learners) David Hite, University of Tennessee
- Illuminating Instructional Technology Support: Spotlight on
  Faculty Instructional Technology Design, Development,
  and Delivery Darla Runyon, Northwest Missouri State University
- Revised "Teaching Serving Learning: Institutes:
  Increasing Faculty Use of Instructional Technology

Michael L. Rodgers and David Starrett, Southeast Missouri State University

- New Directions in Foreign Language Learning: Faculty Development at the University of South Carolina Jessamine Cooke-Plagwitz, University of South Carolina
- Developing a Distance Learning Center Vincent DiNoto, Jefferson Community College
- Instructional Technology and Promotion, Tenure & Merit: Development of University Guidelines David A. Starrett, Cindy Anderson, Bruce Domazlicky, Steve Hoffman, Ted Loso, Jack Stokes, and Cathy Roeder, Southeast Missouri State University
- Supporting Faculty Use of Online Course Management Rhonda J. Spearman and Gina P. Roberts, University of Tennessee, Knoxville

Track 4: Pedagogy and Technology Integration

- American History II Revisited: A Two-Year Retrospective Larry Easley and Steve Hoffman, Southeast Missouri State University
- Andragogy and Technology: Integrating Adult Learning Theory As We Teach With Technology Delores Fidishun, Penn State Great Valley School of Graduate Professional Studies
- Catering to Students Taking an Online Course for the First Time Allison Shelton and Randal Pierce, University of Tennessee Knoxville
- Using the Web to Enhance Mathematical Instruction Marva S. Lucas and Nancy J. Brien, Middle Tennessee State University
- Preparing Mississippi's Future Teachers To Use Technology Eric F. Luce, Susan C. Malone, and Edward C. Mann, The University of Southern Mississippi
- Webagogy- The Melding of Technology with Basic Teaching and Learning Jim Formosa, Nashville State Tech and The Tennessee Board of Regents
- Creating a Low Cost But Dynamic Telecourse Charles H. Frost, Middle Tennessee State University
- New Classroom Technologies and the Busy Humanities Teacher Glenn Everett, University of Tennessee, Martin

Track 5: Best Practices

- A Collaborative Research and Discussion Exercise for a CAI Environment Ronald Kates, Middle Tennessee State University
- Really Using the Web for Learning and Teaching in Higher Education Richard J. Bazillion, Connie L. Braun, Christa Matter, J. William Murphy, Mary Ann Pevas, and Bruce A. Svingen, Winona State University
- Emerging Technology and the Evolution of an Humanties Course Sandra J. Jordon, Eastern New Mexico University, L. Frank McCoy, University of Montevallo
- Introduction to Music Theory and Aural Skills: A Study in developing an interactive music learning environment John A. Steffa, Murray State University
- Building Artistic Sketching Skills with Virtual Reality and Digital Video-Enhanced Computer Practice Jill B. Pable University of South Florida
- Case Study: Using Information Technology at ETSU Kellie Price, East Tennessee State University
- Honors Tech: Integration of Instructional Technology in an Honors Biology Course Sara F. Barlow and Brenda L. Kerr, Middle Tennessee State University
- Integrating the Real World into Cyber Learning Vickie Johnson Stout, David A. Hite, and Ben Smith, University of Tennessee Knoxville
- The Effect of Multimedia Presentations on University Students' Class Attendance Leslie Anne Perry, East Tennessee State University, Timothy T. Perry Appalachian State University (retired)
- Self-Pacing Technology Approach: The Preservice Course as a Catalyst for Learning Jay Sanders, Middle Tennessee State University
- Time-saving Tips for Information Gathering Lynn Flanagan, Rhonda Armstrong, and Karin Hallett, Middle Tennessee State University
- Faculty Compensation Models for Online/Distance Education Timothy C. Johnston, Lynn Alexander, Craig Conrad, and James Fieser *University of Tennessee, Martin*
- World Wide Web Presentations: Futuristic Strategies Rubye C. Sanders, Lander University

Track 6: On the Horizon

- Influences and Barriers to the Adoption of Instructional Technology Tom Beggs, State University of West

Georgia
- Integrating Technology into the Classroom
Karen Jarrett Thoms, St. Cloud State University
- Institutionalizing Distributed Learning: Models of Practice
Steven E. Sorg and Carol J. Darling, University of Central Florida
- The Associated Colleges of the South's Digital Archive of Music Classroom Resources Patricia Gray, Rhodes College

Workshops

- New Web Publishing Features of Microsoft Office 2000 Brenda Kerr, Middle Tennessee State University
- Animations for the Web and Multimedia Applications Daniel K. Ward II, Steven Bardonner, and Kyle D. Wiley, Ivy Tech State College
- Building a Supportive Online Instructional Environment for Reluctant, Apprehensive, and/or Under- Prepared Learners Kathryn Jansak, Shawnee State University
- Algebra, Trigonometry, and Mathematica
Barry Brunson and Claus Ernst, Western Kentucky University
- On the Mark: An Electronic Editing & Grading System Sally Kuhlenschmidt and Charmaine Mosby, Western Kentucky University
- Organizing Course Materials for Online Delivery using Blackboard's CourseInfo
Rhonda J. Spearman, University of Tennessee, Knoxville
- Online Personality and Learning Style Tests
Susan K. Harmon and David. A. Foote, Middle Tennessee State University
- Facilitating Online Communications Using Blackboard's CourseInfo Julie K. Little, University of Tennessee, Knoxville

Free TV for Higher Ed
By Liz Johnson.

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Middle Tennessee State University
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Murfreesboro, TN 37132
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ljohnson@mtsu.edu

After years of requests, the Rutherford County Cable Commission finally awarded Middle Tennessee State University a second educational access channel on Intermedia Cable. Channel 9 began operating in January of 1999 with the mandate to not only offer MTSU public affairs programs and telecourses, but also to provide new and beneficial programming for the community at large. After some Web searching, some academic espionage, and considerable help from colleagues, a new lineup was designed to meet this mandate. There ARE places that want to send you high quality programming for free (or nearly free). This session will discuss some of the best sources, which ones are free, which ones charge, and what conditions may apply. It will also describe the kinds and quality of programming that can be expected from each source. The session will look at video clips of some programs as well as Web sites of some sources. Participants can request subjects to look up on the Web. Handouts of some of the best URLs will be distributed.

Free TV for Higher Ed
By Liz Johnson.

New opportunities from an old, reliable, and familiar technology are becoming available. Cable television is obligated to provide access to local government and educational institutions. Digital television will soon create thousands of new channels. Your institution of higher education can use this ubiquitous medium to present and publicize programs as well as to offer enriching opportunities for your community. To begin this process you must first get to know your local cable commission. These are the people who regulate the cable industry in your community. They determine what cable companies can charge and they tell the cable companies what they must carry. Attend some commission meetings. They are open to the public. Later, you will want to let them know what your plans are.

Check your local cable lineup for vacancies. Look in your local TV schedule. Your cable company also distributes lists of its channels. Click through the channels pausing to note what is or is not airing. Are there gaps between channels? Does the lineup go from channel 21 to channel 23? That means channel 22 is open. Does the exact same programming air on two channels? One of those channels is vacant and is just being filled with a repeat. Does a channel show nothing but ads? That, too, is a vacant channel. These are locations where your school can request space. If you can negotiate a choice, ask for the lowest number you can get. These channels are accessible to a wider audience because they are on a lower tier of cable access.

Most schools already have the basic equipment for broadcasting, but you may need some additional cabling to connect to cable. You can ask the cable company to provide and install this. They may ask you to split the costs, but this should not be a major expense. Some grants are also available for equipment. The Federal Emergency Management Agency, for example, offers a grant to channels that air their programming. Others may offer discounted equipment.

How can you use this channel to publicize your programs? The channel itself is 24-hour publicity. You can run PowerPoint bulletins of campus and community events. Schedule these at times when your audience is already trained to look for this sort of thing. Early morning, around 6:30 a.m. when people are planning their day: noon, when they take a break for lunch; and 4:30 p.m. after school but before your viewers make their commitment to their habitual evening news program. Keep your bulletins up to date and change them frequently to keep people watching.

Stations that run nothing but bulletins are boring. You will need to air programs that attract viewers. This is what the commercial networks do. The programs are only there to get people to watch the ads. You will do the same thing, only you will be advertising your school. There are many sources of programs to capture audiences. Some are free, you can produce your own, or you can show telecourses, which can become the primary support of your channel. Your telecourse audience is a captive audience. Make them aware of other courses and programs.

Do not forget to advertise yourself and your programs. PBS and other telecourse providers make free professionally produced PSAs to advertise your telecourses. Your TV people already have produced PSAs for your school. Use them liberally.

Your channel can put your name in front of thousands daily in print as well. A data service such as TV Data will compile your TV schedule for your local newspaper for only $1.55 a day. Ask for an educational discount. If they cannot give you full weekly coverage, ask for another discount. All you have to do is pay this paltry sum and give them the information. They will do the rest. Use the occasion of special programs or a new series to send out press releases. These will get new audiences watching your channel. Print an inexpensive brochure describing your basic program lineup. Develop a mailing list from the fan letters and phone calls that you will receive. Ask people who call to write letters of recommendation and send them a copy of your TV schedule as a reward. You will use these letters to support your need for the channel.

Put your channel on the Web and let the world know you are there. TV Data will put your channel's schedule on

ClickTV.com at no extra charge. Create and maintain your own Website. Be sure to keep it up to date and people will keep coming back. Use this site to publicize your other programs and link to related activities. Use you campus intranet effectively. Let your campus know that this is their TV station. Send out announcements of program additions or changes. They will feel that they have inside information. Be sure to slant your programming choices to your campus community and you will get a loyal following. Develop email lists of fans, politicians, and colleagues who have expressed an interest or who have helped you get started.

There are several sources for locating the kind of programming that you will want to air and much of it is free or very inexpensive. The Distance Learning Clearinghouse Website lists links to educational satellite programs. It also notes costs and content. Most of these programs are for K-12 grades. The Missouri School Board Association also maintains a Website of links to educational programs. Most of these are also aimed at K-12, but many are non-profit or governmental programs. There are several magazines available for satellite dish owners. Most of these list some free programs and give the coordinates. Orbit Magazine and Satlink Magazine are two of these. Both require subscriptions. Browse these sources to choose your own lineup.

Attached is an annotated list of sources appropriate for a higher education institution. Some of my favorite programs come from FEMA, HEB Televentures, the International Channel, Classic Arts Showcase and NASA TV. Other promising programs that I plan to try soon are PENN Better Kid Care, Center for Disease Control, and the National Science Center.

To get these programs for your institution check the Website for times and coordinates. Join the listserv if it offers one. The list will keep you up to date on new programs or time changes. If you plan to replay a teleconference on cable television, always send an email requesting permission to do so. Explain fully how the program will be used and when. When you receive an affirmative reply, print this and file it. Usually there is no problem with airing a teleconference following the live presentation. Some programs, such as HEB Televentures do not mind you showing them live on cable. Always preview a series before putting it in your schedule to make sure that it meets your production and content standards.

When scheduling your programs, set aside specific times for certain types of programming so that viewers will form a habit of watching it. Allow plenty of time to create your schedule. It is VERY time consuming. It is very detailed work that must be absolutely correct. You want your viewers to be able to depend on you. Ask one or two others to proof read it or to compare the your play list (the schedule that your switcher will work from) with the schedule you send to students, fans, or the newspaper. Eventually, you may want to buy scheduling software. This can range from $600 to $1,2000.

Your school will reap great benefits from your effort of managing an independent educational television channel and so will your community.

FREE TV FOR EDUCATION

NAME	URL	DESCRIPTION
LINKS		
Distance Learning Clearinghouse	www.uwex.edu/disted/satellite/satprov.htm	List of links to educatio satellite programs.
Missouri School Board Association	www.msbanet.org/Satlink/providers.htm	List of links to educatio satellite programs.
MAGAZINES		
Orbit Magazine	www.orbitmagazine.com	Magazine listing free & programs.
Satlink Magazine	www.msbanet.org/satlink	Magazine listing free & programs.
WEBSITES		
Achievement Television	www.achievement.org	Biographies of achieve
Ag Day	http://www.agday.com/	On NBC in some place
Annenburg/CPB Channel	www.learner.org/channel	Telecourse & teacher tr Digital only.
Britain in the USA	www.britaininusa.com	Travel, business, cultur Britain
Center for Disease Control	http://www.cdc.gov/phtn/	Frequent teleconferenc
Center for Transportation and the Environment	ltre.ncsu.edu/itre/cte/cte-teleconference.html	Occasional teleconfere
Classic Arts Showcase	classicartsshowcase.org	Classical MTV.
C-SPAN	www.c-span.org	Live U.S. House and pu affairs.
Federal Emergency Management Administration	www.fema.gov/emi/eenet2.htm	Frequent training for emergency personnel
HEB TeleVentures	www.televentures.org	Interactive e-field trips support materials.
International Channel Network	www.I-channel.com	Foreign language news films, etc.
Juvenile Justice Telecom Assist Project	www.juvenilenet.org	Occasional teleconfere

Project		
Michigan Gateways	www.gateways.msu.edu	Math and science in K-
NASA TV	www.nasa.gov/ntv	Vintage, current & educ programs.
Nat'l Science Center	www.nscdiscovery.org	16 free tapes and satel programs
OVAT Ovation	www.ovationtv.com	CIC free 11am-1pm Tu Digital only.
PENN Better Kid Care Program	Betterkidcare.psu.edu	Almost monthly program
Shamu TV	www.seaworld.org/ShamuTV/shamutv.html	On Animal Planet in so places
TEAMS Distance Learning	teams1acoe.edu/documentation/schedules/schedules.html	Lots of free K-12 and te training.
United Methodist Teleconference Connection	www.umcom.org/umtc	Three-four teleconferen years.
National Committee for World Food Day	Search "World Food Day" around Oct. 16	Annual teleconference

http://www.mtsu.edu/~tlcourse/tv/tvlogos/satellite.html

Ownership Of Course Materials As A Tool In Faculty Recruitment

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Abstract:

As higher education institutions move into forms of distance learning enabled by technologies such as video conferencing and the Internet, the ownership of course materials rises as an issue. Who owns these materials, the school or the individual? This paper describes the issue, covers different views on ownership, and concludes by proposing how schools can use the ownership issue in recruiting faculty. By providing terms favorable to the instructor, schools might attract superior faculty who still wished to pursue a profitable "second life" for their course materials.

Ownership Of Course Materials As A Tool In Faculty Recruitment

Willie Ray Rayburn (mother of the primary author) taught college chemistry courses for forty years, up through the late 1980s. During those years, she gave countless lectures, repeating certain fundamental concepts again and again. Over time, she developed her own teaching methods, presentations, and materials. Some of her creative work remained only in her memory from one semester to the next. Other output took a more tangible form: mimeograph masters, type-written sheets, and hand-written notes stored in a series of filling cabinets. Whether on paper or in memory though, there was a limited market for this creative work - only the courses she taught.

Professor Rayburn was like most other instructors of that time. For the most part, an instructor's lecture "disappeared into thin air." Of course there were the tangible notes, but these had limited use and value beyond next semester's class unless the instructor wrote a textbook.

Technology has changed this situation. With the rise of new distance learning technologies such as videotape, compressed video, and web sites, the ownership of intellectual property has emerged as an institutional issue. The issue is unsettled, and there are conflicting views of who owns what rights. What may eventually emerge from this issue are policies that redefine relationships between higher education institutions and at least some of their faculty.

This paper addresses the ownership issue as an element in recruiting faculty. First, the paper reviews the issue itself and examines why it is important. Second, different perspectives on ownership are examined. In particular, the paper looks at two distinct philosophies on ownership. Last, the paper concludes by suggesting how universities can use this issue to their competitive advantage.

Ownership at issue

Higher education has been labor-intensive, localized, and technologically-limited for decades. This type of instruction was what was feasible to provide; other choices were limited. The classic view of instruction has described an instructor and a (small) group of students meeting together at the same time in the same place - a classroom with a chalkboard for writing and drawing.

Technology now challenges that classic view of teaching. Various distance learning technologies such as

videotape, compressed video, and websites can break down the barriers of space and time. Such barriers are broken for those students, institutions, and instructors who want to break them down. Each party makes its own decision.

Students of course gain more choices for getting instruction and a degree, and in some cases they gain the opportunity to obtain a degree that they could not otherwise get. Students must make choices about whether they want a traditional instruction setting with the inconveniences in time, schedule, and expenses they would have to endure versus instruction delivered via technology. Instruction via distance learning brings its own issues such as quality and validity, but that is not the focus here.

Distance learning technologies are forcing choices on higher education institutions. With these technologies, schools can choose to improve the quality of their traditional instruction, seek out new markets, or gain economies of scale (Rayburn and Ramaprasad, 2000). Distance learning has been a hot issue for the past decade. Many schools have taken an aggressive approach. They seek to serve not just their traditional markets, such as those defined by geography; they pursue new markets with their existing resources (Marcus, 2000b). In addition, for-profit concerns like Kaplan are entering the higher education market (Littman, 1999). Whether new or old providers, they all want to take the instructional resource and leverage it. Many see packaged, easily-transportable instruction as "a scholastic gold mine" (Marcus, 2000a).

Of course, instructors make choices too. Since they "manufacture" the instruction and since it is a highly personalized commodity, they offer products that vary in quality, viewpoint, and depth. One difference today from even a decade ago is that many professors have created course materials that are easily stored and distributed. Less of their output "disappears into thin air" or gathers dust in a filing cabinet. Some view these new forms of course materials as valuable intellectual property that they can earn money from beyond their college salary. One option is taking the intellectual property to some other entity (Littman, 1999; Marcus, 1999). Another option, more entrepreneurial, has the instructor find a market (Glasser, 1999).

Either way, whether as part of an organization or on their own, those faculty viewed as being at the top of their profession now have more outlets for their intellectual property. Or do they? Perhaps a more relevant question is this: Who owns the online course materials, the school or the instructor? Some feel that a school=s faculty could also become part of its competition (Steinberg and Wyatt, 2000). The case of Arthur Miller and Harvard University illustrates this new, unresolved issue.

Arthur Miller is a member of the Harvard Law faculty. Aside from his faculty position, Miller has hosted his own TV program and contributed to other programs such as "Good Morning America" (Marcus, 1999). Recently, Miller committed to taping a series of videotaped lectures for the Concord University of Law, a new online program owned by Kaplan Educational Centers (*The Chronicle of Higher Education* On Line, 1999). Miller felt that his Concord work was an acceptable activity outside his Harvard professorship, just as his earlier work in TV was (Marcus, 1999). Miller and Concord contend that he is not teaching for Concord: he has merely supplied lectures on tape, something like publishing a book, and he has no contact with Concord=s students (Carnevale and Young, 1999). Interaction such as email exchange with students and grading are handled by someone else at Concord (Marcus, 1999). A. Michael Froomkin of the University of Miami School of Law even described this new outlet for intellectual property as the A>Arthur-Miller-on-a-disk= model@ (Leibowitz, 2000, p. A45).

Harvard=s administration disagreed with Miller=s view. They felt that the videotaped lectures were a conflict of interest (Marcus, 1999). Robert C. Clark, dean of Harvard Law, saw the situation as Miller providing Acourse content to another academic institution without permission@ (*The Chronicle of Higher Education* On Line, 1999). Regardless of the outcome, this issue has prompted Harvard to review its ground rules for outside faculty work (Carnevale and Young, 1999; Marcus, 1999).

A brief survey of articles shows other interesting cases that involve the ownership of course materials. At Pima Community College in Arizona, Randy Accetta developed a course six years ago for television broadcast but no longer teaches that course. However, Pima still uses his videotaped lectures and has

another instructor administer the course (Carnevale and Young, 1999). Accetta reported that he received no compensation for the subsequent use of the tapes, and he felt that if he taught a future distance learning course he would seek more favorable terms for himself (Carnevale and Young, 1999). Recently at Drexel, a debate involving the faculty and administration has started over who will own the rights to online courses offered by Drexel (Young, 1999).

At present, no consensus solution seems to have evolved about ownership. However, the next section presents a framework for understanding different views about ownership.

Two views: patents versus textbooks

A recent article (Young, 1999) offered two views about who owns online courses and the material in them. These two views are based by analogy on methods of handling two other types of intellectual property produced by faculty.

In one view, online course materials are like patented inventions; schools own the patent rights but perhaps share revenue with faculty developers (Young, 1999). For instance, suppose a chemistry professor uses school lab facilities to develop and patent a new innovation, one that has a commercial market. The school would likely own the patent but perhaps share some financial reward with the professor. An argument in favor of this view would be that the online course is resource-intensive. The school may provide equipment and staff support to faculty to develop the online course (Young, 1999).

In the other view, online course materials are like a textbook; faculty generally have full ownership of a text they write (Young, 1999). For instance, suppose a history professor writes a new textbook. Typically, that professor would retain full ownership of the text. An argument in favor of this view would be that the online course materials are merely an expanded, latter-day form of what used to go into a text. In his case, Arthur Miller argued that there was no difference between his videotaped lectures and other materials such as textbooks (Marcus, 1999).

These two views, the patent versus the textbook, seem to frame the debate on ownership. Both base their arguments on how schools and faculty have dealt with older forms of intellectual property. Whether one view or the other or perhaps some compromise between them will become a standard policy remains an open question. However, the issue of ownership may provide a tool in faculty recruitment. The next section explores this idea.

Online ownership as a tool in recruiting faculty

Higher education institutions compete with each other in many areas. One area where schools compete is in the labor pool. There has always been a competitive market for Astar@ faculty, at least among elite schools or ones that aspire to elite status. Among the ways that schools seek to lure desired faculty are money (Lewington, 1999a; Schneider, 2000), the chance to build a program (Lewington, 1999a and 1999b), research support (Lewington, 1999a), higher morale / better atmosphere (Schneider, 2000), improved facilities (*The Chronicle of Higher Education* Give & Take, 2000), and recruiting candidates as a group (Heller, Mangan, and Basinger, 2000).

Schools that want to attract superior faculty may add favorable ownership terms to the above listing as a way to enhance what they offer. In a competitive marketplace, a school that offered better terms on the ownership of online course materials could use that to its advantage when recruiting faculty. This advantage could be especially true when the school's package was otherwise no different from or was perhaps weaker than what competing schools offered. Such an incentive could attract faculty who would contribute greatly to the school but who still wished to pursue a profitable "second life" for their course materials. In a job package, ownership slanted toward the faculty could overcome weaknesses elsewhere, especially in salary. Some even suggest that to get *existing* faculty to innovate schools need to give them an incentive to go online - such as rights favorable to the professor (Carnevale and Young, 1999; Young, 1999).

Institutions that wish to pursue an aggressive recruiting strategy should identify their competition and

analyze what they offer. Smart administrators and search committees will always do this. But now ownership of course materials is another angle to add to the recruiting mix. Schools need to (1) decide how to handle the ownership of online courses and materials and (2) know what their rivals do. A school should know either to gain an advantage in the market or to defend against a competitor who uses favorable terms as a recruiting tool.

Regardless of the outcome, schools must address the issue of who owns online courses and materials. The issue may decide how much the existing faculty develop distance learning programs and how the school fairs in getting the faculty it wants. Ownership may well move from merely a personnel issue to a competitive issue. Schools that plan now may avoid future problems and perhaps gain an advantage.

References:

Carnevale, Dan and Jeffrey R. Young (1999), "Who Owns On-Line Courses? Colleges and Professors Start to Sort It Out," *The Chronicle of Higher Education*, December 17, 1999, p. A45.

Glasser, Peggy (1999), "A Medieval Strategy for a Digital Age," *The Chronicle of Higher Education*, November 19, 1999, p. B9.

Heller, Scott, Katherine S. Mangan, and Julianne Basinger (2000), AYale=s Art-History Chief Leaves for Getty; Wake Forest Seeks to Hire 10 Geneticists From U. Of Maryland; Senator Kerrey to Head New School U.,@ *The Chronicle of Higher Education*, February 25, 2000, p. A12.

Leibowitz, Wendy R. (2000), "Law Professors Told to Expect Competition From Virtual Learning," *The Chronicle of Higher Education*, January 21, 2000, p. A43.

Lewington, Jennifer (1999a), ACanadian Universities Are Losing Top Professors to U.S. Institutions," *The Chronicle of Higher Education*, September 17, 1999, p. A57.

Lewington, Jennifer (1999b), AHow Some Canadian Institutions Pull Off Recruiting Coups ," *The Chronicle of Higher Education*, September 17, 1999, p. A59.

Littman, Margaret (1999), "Kaplan's New Test," *University Business*, September, 1999.

Marcus, Amy Dockser (1999), "Seeing Crimson: Why Harvard Law Wants to Rein In One Of Its Star Professors," *The Wall Street Journal*, November 22, 1999, p. A1.

Marcus, David L. (2000a), "A Scholastic Gold Mine," *U. S. News & World Report*, January 24, 2000.

Marcus, David L. (2000b), "A Profit On Every Campus," *U. S. News & World Report*, January 24, 2000.

Rayburn, William and Arkalgud Ramaprasad (2000), "Three Strategies for the Use of Distance Learning Technology in Higher Education," *Distance Learning Technologies: Issues, Trends, and Opportunities*, edited by Linda Lau, Idea Group Publishing.

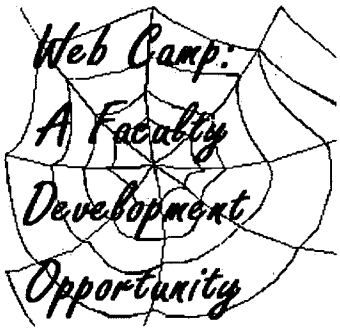
Schneider, Alison (2000), "Stanley Fish, as a College Dean, Makes a Big Splash and Spares No Expense," *The Chronicle of Higher Education*, February 4, 2000, p. A16.

Steinberg, Jacques and Edward Wyatt (2000), "Boola, Boola, E-Commerce Comes to the Quad," *The New York Times*, February 13, 2000, Section 4, Page 1.

The Chronicle of Higher Education On Line (1999), "Harvard Tussles With Law Professor Over Use of Course Content," December 3, 1999.

The Chronicle of Higher Education Give & Take (2000), AYale Will Spend $500 Million on Medical-School Renovations," *The Chronicle of Higher Education*, March 10, 2000, p. A38.

Young, Jeffrey R. (1999), "A Debate Over Ownership of On-Line Courses Surfaces at Drexel U.," *The Chronicle of Higher Education*, April 9, 1999, p. A31.



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Introduction Faculty Development Web Camps Conclusion

Introduction

Ever-increasing use of computers on university and college campuses demonstrates the need for educational opportunities for faculty interested in integrating technology into the curriculum. Society is making demands as never before, because technology has changed not only work and the knowledge required to perform work but also national and international economics, demographics, and the structures of society. Faculty have acquired an obligation to understand technology and to convey that knowledge to their students, whether in the classroom or in Web-enhanced courses. Going along with the faculty commitment, universities and colleges have a duty to ensure that users and specialists alike have all the necessary assistance as they undertake to gain skills with the technologies they will use every day. As the electronic learning systems become more prevalent, specific support enterprises will have to undertake key activities to ensure high-quality faculty development opportunities.

How do faculty acquire the skills necessary to develop technologically-enhanced instruction? Some faculty have the intellectual ability and creativity to acquire and develop these skills independently. Many faculty do not. While some faculty readily adapt to using instructional technology in their classrooms, many others are either unable or unwilling to embrace new technologies. This reluctance may be due to a fear of the technology, lack of ideas about where and how to use the technology, or very often, lack of access to the technology.

Another large question is: when there is a need to create learning materials that stimulate student interest and measure student achievement, how do faculty present a quality curriculum that integrates technology? Because of the way in which technology is permeating our lives, it probably is safe to say that people will embrace a technology that is accessible, functional, and useable. An environment that encourages the use of technology will include opportunities to learn about technology, to explore educational implications, to discuss design issues, to obtain mentoring, to make the technology fit into the faculty work environment, and so on.

Web-enhanced courses, for example, can provide educational experiences that learners might not otherwise have: access to many more resources including simulated diagnostics and situation training along with other interactive activities.

Rather than having an instructional designer or technologist prepare the Web-enhanced environment, it is my contention that faculty should assume this responsibility themselves. In order to teach well in a Web-enhanced environment, faculty need the responsibility for developing and maintaining the Web site. Providing guidance on what constitutes good design, assistance on what kind of electronic assignments work well and so on certainly are in the purview of the support individual or team. Experience with diverse teaching strategies and Web-enhanced curriculum will result in solid instructional events and activities that

- stimulate motivation
- make learning objectives known
- direct attention
- encourage recall
- enhance retention
- guide the learner
- promote learning transfer
- elicit performance
- provide feedback.

Success with these kinds of instructional events and activities can be achieved when faculty are assisted to develop technology solutions appropriate to their discipline and curriculum. The tone of events focusing on technology solutions needs to be at the same time upbeat and low key. Overwhelming individuals with too much information or too much glitter when they are not ready to receive it does not constitute a sound instructional strategy. As the use of information technology becomes pervasive, some members of the faculty are plunging ahead using technology to enhance their teaching. Others are cautious and wonder just how--in the long run--technology will influence their current methods of teaching.

Faculty Development

Faculty development efforts should be about creating and facilitating learning experiences that promote the acquisition of specific knowledge and skills. In "The changing face of instructional technology centers," Joan Mitchell tells us that "the use of technology in education will be stimulated when training and support are offered, multimedia collections exist, and equipment is available in a supported environment."[1] Provision of such an environment will go a long way toward infusing faculty with enthusiasm for technology-integration that will make the learning experiences for their students more efficient, effective and appealing.

How such an environment evolves depends very much on support personnel who must employ sound philosophical and pedagogical reasoning that will make the learning environment valuable and worthwhile. The authors of "Reclaiming instructional design," state that "the technology of instructional design, like other technologies, is not a natural phenomenon. It is man-made, designed to serve our needs."[2] This technology of instructional design will require that learning

opportunities are available. Technical competence, solid understanding of educational rationale and instructional goals as well as the ability to provide training on hardware and software applications are critical elements in faculty development support.

Web Camps

Until recently, at Winona State University, one of the primary faculty development activities related to technology occurred in the form of "Web Camp." Web Camp is an eight day event that focuses on providing interested teaching faculty with opportunities to explore curricular enhancements through website creation, organization and display of information, consideration of new and different teaching strategies, along with trying out various means of electronic communication. Web Camps occurred to advance web-enhanced instruction as a means of promoting learning by providing access to course material, interaction between students and instructors, opportunities to test learning, and access to information outside the objectives of the classroom. Deliberately, members of faculty from different disciplines are brought together in the Web Camp setting. This mix ensures that ideas are shared across subject matter and that new relationships are established.

Through a series of tutorials and lessons, "campers" are introduced to and learn software applications that enable them to develop websites they can use to enhance their courses. Guests are invited to stimulate discussion about Internet searching, what constitutes characteristics of a good website, issues related to copyright and electronic resources, campus web policies and so on. Presentations by colleagues who have been using web-enhancements in the classroom generate great interest. Throughout Web Camp there is an ongoing philosophical and practical discussion regarding how a subject-specific course website might (or not) provide a valuable enhancement to more traditional classroom teaching. Intentionally, Web Camp is not about training, although that is a by-product of the experience. Rather, Web Camp is about learning, enhancing, creating and interacting with software, ideas and other people and making an important discovery: faculty have an obligation to explore and come to grips with customizing and managing the instructional processes of integrating technology into teaching and learning.

Web Camps take place in a studio classroom, with computers positioned around the perimeter of the room, thus leaving the center of the room open for easy transit and communication. Web campers are placed so that novice computer users sit next to and in between those with more experience. This kind of arrangement enabled participants to call on their neighbors as a way to experience peer teaching and collaborative learning. If additional help is needed, and it often is, one or the other of the consultants is asked to lend assistance or provide an answer. Plenty of practice and development time is built in to the schedule following each tutorial and lesson so that participants have the opportunity to apply their newly-acquired skills to designing a website. Consultants, who demonstrate the tutorials and lessons, are available throughout the eight days of each Web Camp to offer one-on-one coaching, answers, suggestions, recommendations and other assistance as required by individuals campers.

The most obvious purpose of the Web Camps is to provide faculty with an opportunity for concentrated and intense development time of a web site devoted to one or more courses. A second purpose could be described as making the effort to encourage and foster the development of social connections between and among individuals and groups. To that end, Web Camps feature demonstrations and

discussions on

- specific parts of software and hardware applications
- incorporating technology into student curricular and co-curricular experiences
- humanistic social activities
- access to and creating extensive electronic resources
- informative, accurate Web sites
- interesting, interactive multimedia
- easy navigation.

Concentrating on these features means that faculty participants learn that the key to enhancing learning and personal development is not simply for faculty to teach more and better, but also to create conditions that motivate and inspire students to devote time and energy to educationally purposeful activities, both in and outside the classroom.

Web Camp is a dedicated development time (eight days, seven hours in length) set aside for creative purposes with consultants available to provide whatever support is necessary. The primary intention is that faculty participants become comfortable with new teaching/learning approaches and technology-integration as quickly as possible. Obtaining a reasonable comfort level is critical because it is the faculty, finally, who will design and manage how technically-mediated instruction will occur, ideally in a way that introduces new power and responsibility to the learner. I share George Connick's and Jane Russo's contention that "this is an exciting but unfamiliar role for faculty and students alike, and one that is not without its share of risk."[3] By assuming this role, faculty participants gain experience in teaching with and through technology while simultaneously redefining and enlarging the scope of the pedagogies they endorse. Web Camps are hosted by several consultants who have knowledge of web page creation, image-editing software, useful technologies and how interactive, pedagogically-sound activities can be developed. Consultants are available throughout the eight-day camp and after to provide assistance to campers.

To keep the learning curve to a minimum, software applications chosen for use during Web Camp are Microsoft FrontPage™ and JASC's PaintShop Pro™. FrontPage is a powerful program that requires little experience beyond understanding basic wordprocessing concepts and electronic mail, as well as having some knowledge of the Internet and its capabilities. Because familiar concepts are used, little time has to be devoted to formally teaching software. Rather time is spent using the software to create a learning environment. FrontPage is integrated in such a way that working with tables, forms, and hyperlinks as well as inserting images and multimedia files can be done with one software package.

PaintShop Pro™ is software that campers use during Web Camp to create their own graphics or edit the graphical creations of others. Adding images to web pages can greatly enhance the impression made on viewers of the website. While used by many professionals, PaintShop Pro remains easily accessible for those with little experience in the field of graphics production and editing. PaintShop Pro™ offers easy and reliable ways to edit and tidy the image files that result from using the digital still cameras as well as flatbed and slide scanners that are available during Web Camp and after.

Web Camp is a busy and intense time (but very rewarding) for both consultants and participants. High levels of enthusiasm and cooperation, mean that the challenge of getting through the curriculum is easily met. Specific activities that occur at Web Camps include:

- identifying instructional goals
- determining appropriateness of specific technology to achieve academic goals
- designing a good Web site
- providing assistance with assessment and evaluation
- enforcing the idea that technical and instructional support is available
- working with digital cameras and scanners
- experimenting with adding audio- and video-clips to Web pages
- working with graphics, both still and animated
- creating and using frames
- developing forms
- exploring online testing
- gaining an understanding of copyright and campus Web policies
- experimenting with discussion groups
- other technologies: streaming media, NetMeeting, WebCompass, etc.
- "Show and Tell" sessions at which all participants are encouraged to demonstrate their achievements

Campers who participate in the Web Camps are expected to bring along with them the basic outline for a web project. In general, projects have revolved around a course that is scheduled for the upcoming academic year. With wordprocessed files on floppy diskettes, faculty participants are able to use the copy-and-paste function to greatly ease the transition to web page creation. Much time is devoted to encouraging campers to employ a reliable organizational structure both at the server and browser levels. So much time can be saved if this effort is made.

Conclusion

The emerging Information Age is calling for different learning environment than that of the Industrial Age. Much larger amounts of information are being screened and assimilated. Greater numbers of students arriving on campus are older bringing with them significant experience and accomplishment. "To remain employed in an unpredictable job market," says Elizabeth Tebeaux, "students can no longer depend on the future relevance of today's technology, which is becoming outmoded by the growth in knowledge stemming from technology."[4] For this reason, universities are having to acknowledge that technology is gaining momentum and validity as

learning is being transformed. As a result, synergy and collaboration are being elevated as technology becomes fully integrated into learning.

As the result of information technology, changes in the learning environment are possible, desirable and achievable. The advent of ATM (asynchronous transfer mode) networking protocols offers the possibility of rich, interactive learning opportunities employing multimedia, streaming audio and video, standard academic journals now available online and so on. Every day, new information resources become available that benefit active and flexible learning. With all of these possibilities, it seems wise to follow the trend to create a technologically-enhanced environment, geographically confined or otherwise, that permits people to transcend both distance and time barriers to the educational process. Web Camp events and continuing support through one-on-one and small group encounters, seem to have made a significant contribution toward creating a truly flexible learning environment, one shaped by careful thought and articulated in such a way that all members of the campus community are excited by the prospects for the future.

Notes

1. Joan S. Mitchell, "The changing fact of instructional technology centers," *Bulletin of the American Society for Information Science* 16(6) (August/September, 1990): 7

2. M. David Merrill, et al, "Reclaiming instructional design," *Educational Technology* 36(5) (September/October, 1996): 5

3. George Connick and Jane Russo, "Technology and the inevitability of education transformation," in: Erwin Boschmann (Ed.), *The Electronic Classroom: A Handbook for Education in the Electronic Environment* (NJ: Learned Information, Inc., 1995), p. 18

4. Elizabeth Tebeaux, "The high-tech workplace: implications for technical communication," in: B.E. Fearing and W.K. Sparrow (Eds.), *Technical Writing and Practice* (NY: Modern Language Association, 1989), p. 137

TAKING INSTRUCTION ONLINE?

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Abstract: Taking instruction online? So what do you do now? This paper will provide a checklist of suggestions, hints, and competencies needed to take your course from ideas to reality. Topics include adapting a syllabus, pedagogical concerns, integrating group work, discussion of administrative issues, developing and writing web content, using multimedia and courseware, and choosing assessment methods.

TAKING INSTRUCTION ONLINE (?)

Introduction

Creating a learning community is important in the traditional classroom as well as in the online

classroom. The differences between the two learning environments are obvious: face-to-face contact with the instructor is not possible unless students make the effort, face-to-face contacts with other students are not likely unless they make the effort, and nonverbal communication cues are lost that enhance student understanding and interaction. What this implies is that the instructor must set the climate for student learning using the computer as the medium. The new paradigm of education brought about by computer-mediated communication (CMC) is that the "key to the learning process is the interactions among students themselves, the interactions between faculty and students, and the collaboration in learning that results from these interactions" (Palloff & Pratt, 1999, p. 5).

Adult learners in the distance learning environment are motivated to seek meaning from a new learning setting and will become comfortable in that setting when they are able to apply what they are learning to their own lives and situation. They cannot begin to make sense of the new setting and the learning without specific course objectives and guidelines, continuous feedback and evaluation, and access to the instructor. The sections, which follow, will suggest meaningful methods to help learners and the instructor adjust to a new learning and teaching location.

Pedagogical Potential of the WWW

Recent theorists in educational circles (*constructivism*, Brooks & Brooks, 1993; Cranton, 1994; *active learning*, Myers & Jones, 1993; and *transformative learning*, Mezirow, 1991; Sherry & Wilson, 1997) attempt to bridge the gap between the traditional paradigms of education and the new computer-mediated paradigms. *Constructivist* and *active learning* theorists suggest that learners *actively construct* knowledge and meaning through experimentation, exploration, manipulation, and testing based on past experience and accumulated knowledge.

Transformative learning, according to Mezirow (1991), is an unanticipated result of online learning. Students' perspectives are *transformed* when problems are encountered that cause learners to reassess prior knowledge, beliefs, relationships, or experience. Just getting involved in an online learning environment challenges students' traditional perspectives of learning. Students and instructors relate differently to each other, thus forcing students to rethink the roles of learner and instructor. The learner can pause and reflect on what he or she is learning; the instructor can develop new understandings of the subject and the learner.

For the most part, transformative learning is an unconscious process but has far-reaching implications for instructors who must make room for more independence, competence, and reflection in their learners. Palloff and Pratt (1999) summarize this transformative process, as follows:

> ...personal growth becomes a companion to intellectual growth as the student assumes greater responsibility for the learning process, competence, authority, self-confidence, and an overall sense of mastery and power (p. 131).

Migrating the Course to the Online Environment

Over a four-year period, the authors have been involved in teaching a total of more than 15 online courses. When teaching and learning leave the classroom, the instructor has to create a vessel within which the course is launched. The challenges that face the instructor can be daunting. The discussion below focuses on each of the challenges that an online instructor should consider for successful online teaching.

Determine your course objectives. In advance of teaching the course, determine your course goals, objectives, and preferred learning outcomes. They can be much the same as for the same course taught in the traditional environment. Students learn differently, however, in the online medium. They not only have to process information but they have to both access *and* process information.

Etiquette. Setting up class guidelines as a group at the beginning of the course will alert students about appropriate behavior and communications during the course. Just as in the offline class, students who have input into the management of the online class will act to curb inappropriate

remarks by other class members.

Developing your course materials. Don't think in terms of developing a "new" course -- you aren't! You are simply changing the delivery method from a traditional to a distance method. Initial development of online course material is very labor-intensive. Give yourself enough time. Combine materials in print, video, voice, and audio to develop non-linear, linkable content. Keep technological constraints in mind. Don't use a technology so sophisticated that your students are not likely to have access to it. For example, do not develop video materials if your students' computers are not up to the challenge.

Review your existing course materials. Your course materials may have to be altered or adjusted due to the new delivery method for your course. Take advantage of the online environment by providing students with relevant hyperlinks to web-based material within your course content. Examples and simulations can be found online. Use them to give a "real-world" feel to your course.

When developing your lecture materials, use a conversational tone. Otherwise, your students will simply feel like they are reading another textbook. Keep the material lively--dry and terse. You have to work harder to keep the students' focus and attention in the online environment. Utilize the principles of collaboration and active learning. Choose textbooks for your online course that are supportive of the online environment. Some have Internet components, activities, and websites for the student. Personalize the materials; use what-if's and humor if they are appropriate and add to the content.

Constantly review and revise your course materials. Technology changes rapidly; update your course as you can add new and exciting elements that can enhance your course materials.

Access to library materials and the instructor. The feeling of information overload can be averted at the beginning of the online class by providing a "starter" list of resources and links that can be amended and expanded over the duration of the course. In this way, students will not spend needless time searching the Internet for an unknown target. If a research project is required as part of the course evaluation, students may need access to on-campus library materials. Access to the on-campus library materials may require the services of an instructional services librarian, a specific password, and additional plug-ins to read the materials. For students who do not have the bandwidth to accommodate large amounts of data in single files, encourage them to work with their group members to obtain these materials. Copyright issues also must be addressed so that the fair use considerations are not overextended.

To successfully conduct online classes, all participants (students and instructor) must have access to and be familiar with the technology to be used. The comfort with both hardware and software contributes to a sense of psychological well-being and to a greater likelihood of participation (Palloff & Pratt, 1999). The learning curve for new students in the online environment will require more involvement with the instructor at the beginning of the course and may require group members to spend more time than normally expected of group members. All of this should be incorporated into the learning and teaching process.

Additionally, technology problems--computers crash, ISPs go down, and large amounts of online traffic at peak times--occur that prevent students from completing work in a timely manner or prevent access to group meetings. A certain amount of leeway needs to be built into the course to take these unforeseen occurrences into account. Instructors will only know about these problems if they stay in touch with and are available to their students. Develop a back-up plan in case the inevitable happens!

Organize your course materials and course plan. Become relentlessly organized. If you attempt an online course without adequate preparation and organization, you'll be overwhelmed. Be prepared--but also be flexible and roll with the punches. Keep your administrative course materials available on the course website for the student--syllabus, class schedule, instructor contact information, technical support information, academic integrity policy, testing policy, and others.

You might consider developing a set of Internet help documents for your students, such as documents on viruses, using attachments, cybersafety, and more. This, in the long run, will likely cut down on student questions, and, thus, your email!

Managing Groups in the Online Environment

The change to online teaching necessitates a focus on learner-centered instruction rather than a content- and faculty-driven approach. In this environment, student work and peer evaluation are encouraged with the instructor facilitating the process wherever it may lead. Collaborative learning techniques create an equal playing field where the interaction often occurs throughout the group instead of between one participant and the facilitator. Both students and instructor act as group members, contributing to the learning process (Palloff & Pratt, 1999). Consider the following factors as they relate to managing groups online.

Time. Time in the distance learning environment takes on many meanings. The discussion below touches on three critical points:

1. First, Web environments are "multi-speed" (Harris, 1994). Learners have the capability of accessing materials on their own time and over time. Materials provide the cohesiveness needed to engage learners and establish themes for interaction and discussion.
2. Second, time relates to feedback that is critical to maintain students' interest and interaction with the instructor and their peers. From the beginning of the course, acknowledgement of the students through initial online contact must be attempted--even before moving into the course content. Throughout the course, however, access to the instructor remains one of the highest needs for students. Set up a schedule to deal with time and access issues.
3. Third, the amount of time to prepare and administer an online course may be roughly as much as two to three times greater than it takes to prepare for and deliver an offline course. Time must be spent reviewing assignments, reading student and group posts, responding to individual and group posts, dealing with individual questions, and reading student and group assignments. Simply posting material and walking away for a week may result in an overload of messages and posts, making it difficult to re-enter the class discussions. Setting up groups in the online environment takes special attention to actual mileage distances between students, experience with online learning, fields of expertise and employment, and other personal considerations known only to the instructor. In the online environment, the instructor cannot simply divide the group by counting off by fours. Paper creation of the groups, notification of the group membership, access to group tools (such as chat rooms, email addresses, group Web pages, etc.) must be arranged, and working with each group in its own time must be carefully thought out and planned.

Group size. Closely related to time are issues of group size--mainly due to the ability of the instructor to maintain some semblance of control over the process without undue information overload for students. Factors to consider in setting up groups include the level and skill of the facilitator and students, knowledge of the electronic medium, content discussed or explored, assignment resulting from the group work, and the means of discussion or exploration. For the instructor and the students, five to ten members is an ideal number. However, if the collaborative work is an original paper or case study and online presentation, a smaller number of group members and staggered posting dates would be better. Graduate students can work in larger groups better than undergraduate students, who will need more assistance and input from the instructor.

Guidelines for group work are just as important (if not more important) in the online class as in the offline class and should be posted close to the beginning of the class. Each group needs a team leader, a convener, an arbiter, and a recorder. Group differences should be handled within the group itself and online if possible with the instructor. Participation is an important part of group work and the final grade; group members should evaluate each other's participation and contributions to the project with the resulting score being factored in for each group member. Scheduled electronic meetings with each group and the instructor are critical throughout the progress of the project.

Overcoming distance. The impact of the distance learning environment can lead to feelings of isolation or alienation unless the instructor is willing to commit the time and energy to being available and responsive to students' questions and assignments. Ways to assist the learner in overcoming the "lost in cyberspace" feelings must be incorporated into the course. Being assigned immediately to a discussion or project group may help overcome these feelings of unconnectedness and dissonance discussed previously. With no frame of reference and/or prior experience, connecting with other students from the very beginning of the course is crucial.

Getting started with collaborative learning in DL. Given that team products can be displayed (and should be) to class members, the resulting project should reflect well thought out guidelines and directions. Since the opportunity to discuss all questions related to the group project(s) cannot be accomplished face to face, the instructor must anticipate FAQs and post them along with the guidelines. In addition, as other questions are asked during the course, these questions and answers also should be posted. Group assignments may start simply: pairs of students may be asked to email their thoughts and ideas regarding an assignment to the entire class. From this small beginning, other collaborative projects, such as group responses to discussion threads, may be incorporated. Always provide good directions with specific deadlines.

Examples of group activities. Empowering students through shared leadership in the online course enhances their overall sense of interdependence, accountability, and participation. A number of generic cooperative learning methods are amenable for the online environment. Table 1 (at the end of the paper) illustrates a number of projects from the literature as well as from experience. The interactions also are tied into each activity. From the presentation of the activities in Table 1, one can see the wide variety of activities that can be incorporated into the online classroom. As technology continues to evolve and bandwidth increases, video streaming techniques will enhance the same time/different place phenomenon which occurs in asynchronous learning. Further discussion and activities may be found in *Web-Based Instruction* (Khan, Ed., 1997).

Developing Web Content for the Internet Course

Writing content for the web-based course is different than writing content for other media, such as print. Great print design is likely to be poor web design. Print design allows users to walk through the information and look at objects and information that enhance each other. It is a "canvas" experience. Web design should allow for interaction and user movement through hypertext. It is a "scrolling" experience. As a result, we have to change our writing style to reach our online audience, the students. If lectures are written properly, they should not have to be printed. Students should be able to get what they need from the screen or a file. However, browsers are not especially supportive of easy-reading documents since they are typically set for small fonts and typeface. Keep font size in mind when writing your content. Documents that are written as .txt or .doc documents should be able to be read online. Adobe Acrobat files should, on the other hand, never be read online and students should be advised to print them.

Content writing and hypertext. Writing content for the web and writing hypertext (HTML) are two different concepts. Writing hypertext is a skill that is separate and apart from writing content. Writing hypertext is actually designing the website from a technical point of view. Writing content is filling in that website with something meaningful to your course. Web content should be developed by the professor and then be converted to hypertext by technical support personnel. The use of hypertext and linkable material is what enhances your online course and makes an online course a rich experience. It allows your content to be connected to relevant Web resources. As a result, it gives your student a new depth of understanding and adds a new dimension to course lectures. Print content is still superior to web content because of speed, type, and image quality. The Web is superior in terms of interaction and user engagement. As time passes and technology advances, these differences will become blurred. Every year, users get 50% faster bandwidth. Within 3-10 years, users may prefer reading on the Web to reading in print.

How do students read on the web? Students, specifically, and web users, in general, don't read on the web! They scan. About 79% of users scan web pages. Only about 16% read them word for

word. In general, the Web is good for certain types of information retrieval: chunking and scrolling (Kilian, 1999). *Chunking* is the process of breaking your lectures or other information up into segments, preferably 100 words or less. Chunks should always be visible on one monitor screen. Two or more chunks constitute a *stack*. Hypertext links should take the student from one chunk or stack to another as well as to other relevant websites (Bonime and Pohlmann, 1998). Put hyperlinks at the end of your chunks and stacks. The student will go to the other site and come back to yours. Scrolling web content is suitable for long documents like articles or even entire e-books. Scrolling, however, tends to tire out readers. If you have to use long documents in your course material, try breaking them up into chunks and stacks and connecting them with hyperlinks. Also, improve long documents that must be scrolled by providing lots of white space (for reader rest) and narrower columns.

Writing style. Cluster your content in logical order so students can easily move between chunks and stacks and utilize hyperlinks. Use headings and subheadings for readability. Use the inverted pyramid style of writing. Start with the conclusion. Then give the relevant facts and, finally, talk about the background. If students scan or read only the first part of what you have written, they will still, in this way, get the important information. Use active and not passive voice, as passive voice sounds dull on the Web. Remember that our students are used to responding to sound bites and 30-second commercials. Make your content jump at them with the "hook" being the first word, heading, or sentence.

Interactivity and non-linear content. The beauty of an online course lies in its interactivity. Use hyperlinks to supplement your course materials. Link your bulleted or numbered lists to the appropriate chunk of content. If you use a lot of hyperlinks, provide a table of contents or roadmap for the student so they don't get lost within your course. Use a non-linear approach to writing your content. A traditional lecture class is linear in nature. The online class, on the other hand, is linked to many sources that can lead the student in many different educational directions.

In writing web content, your goal is to create multi-tiered, multi-layered course material that is easy to follow with high readability.

Assessment and Evaluation Issues in Online Courses and Programs

Formative and summative evaluations are generally used to provide feedback to students on their on-going progress and upon final course completion. But does this model fit the dynamic, learner-centered nature of online learning? Research into assessment of online learning suggests that other viable methods should be built into the class structure. Some of these methods could also be translated to the traditional classroom.

If course guidelines and outcomes have been well defined, if student performance criteria have been established, and if students have been able to define their place in the course, then formative evaluation should be reasonably easy. Formative evaluation should take multiple sources of data into account, such as the quantity and quality of postings on discussions, participation in chat room meetings, performance in course assignments, and involvement in group activities. Several ways of determining if students are gleaning the most from the learning experience may include some of the following evaluation examples.

Dialogue. Continuously scanning the ongoing dialogue in discussion threads is a rich source of evaluation material. Stopping to post comments or ask questions during the dialogue also engages learners to extend the boundaries of the textbook or other written materials. Adults are a rich source of life and work experience; providing the runway for them to safely share these experiences will enrich course content and the online learning experience. Just adding comments to a discussion thread may not be enough for some students who are always concerned about the qualitative nature of their course participation. Borrowing on a line from a popular movie (*Field of Dreams*): *Give them points and they will come.* Instructors must realistically understand that not all discussions are voluntary. Changes in behavior (learning) can occur once students are engaged in meaningful dialogue with their peers and the instructor.

Chat room visits. Participation in synchronous discussions with the instructor and peers is critical in an online class. Participation points may be enough to entice students into the chat room environment. Collaborative learning techniques--ask an expert, panel discussions, press conferences, group-led discussions, or merely being available to clear up questions related to course or group assignments or materials--can build classroom ambience into the online environment.

Student assignments. Instructors in online courses may be concerned about cheating. Idealistically, if the course guidelines, objectives, and course environment (learner-centered, empowerment, self-reflection) have been planned well, cheating should not be a problem. The instructor has to build into evaluation the critical thinking aspects of the course and collaborative assignments. Evaluation needs to promote self-assessment, reflection, expert development in the subject matter, and production work that can be useful for others in the class. Learners only cheat themselves if they don't take advantage of peer experience and teaching. Assessing student and collaborative assignments may be accomplished by asking students to evaluate their own work before submitting it, complete learning contracts for a certain grade at the beginning of the course, share and evaluate others' work, and use of scoring guides which reflect the objectives established for assignments. Taking the time to add written comments throughout students' submitted work will add to their learning and willingness to participate and accept suggestions for improvement. The old saying: *Students won't care how much you know, until they know how much you care* holds a lot of truth in an environment where written cues are the only reliable tools instructors have.

Group assignments. Developing skills in giving feedback can be useful in the online environment and in the external world of work. Collaborative assignments provide the opportunity for students to extend and transform their own learning.

In the business world, 360-degree feedback (London & Beatty, 1993) comes from many sources. In the online course, the instructor can build 360-degree feedback through peer evaluation, self-evaluation, and his or her own evaluation into a group project--especially the capstone project. Students need to know from the beginning that peer evaluation will be a part of the final assessment for the project, and the evaluation instrument should be posted online for students to review. Then, as part of the final group project grade, the instructor's evaluation, the self-assessment, peer assessment, and group cohesiveness all can be summed together for the final grade. The instructor is the final arbiter of the group grade.

If an instructor wants to include examinations and quizzes in the evaluation of student work and group projects, additional planning needs to take place. Some courseware permits the creation of online tests and quizzes which allows students to receive immediate feedback and grades their answers. Additionally, the courseware also may post the grade in the student's personal online file and will not allow the student to retake or modify the test results. The issue of whether the student whose name appears on the exam or test is the person taking the test may arise. Some instructors prefer to have students take proctored exams or tests on-site--either in a campus classroom, a remote location with a designated person, or with a testing service. Whichever method is used should be made clear to the students at the beginning of the course.

Additional considerations. Assessment in the online course takes the instructor full circle from the beginning of the course to the end. Evaluating student group assignments and participation also should include consideration of the needs and learning objectives students identified at the beginning of the course, their educational level, experience with the subject matter and the technology, and issues related to writing.

Feedback *from* students related to course assignments, discussion threads, chat room visits, or group assignments is another form of assessment that can be built into the course or may occur as an unexpected benefit of the online relationship between the students and the instructor. Planning for and expecting feedback throughout the course will enrich the experience for both the

instructor and the students. Feedback is a rich source of assessment, reflection, and continuous improvement of the course for the instructor. Students who are willing to trust the instructor to take comments with an open, honest spirit learn to own and share the online learning and teaching experience.

Choosing Courseware for Online Instruction

Now that we've considered some of the most relevant issues regarding taking instruction online, we must look at choosing a vehicle through which to deliver the course. Some instructors choose to deliver online instruction through their own web page. This is not an optimal solution since there are sophisticated courseware packages on the market--and more being developed all the time--that are excellent vehicles for course delivery.

Some of the more popular courseware packages are Blackboard CourseInfo at http://www.blackboard.com/ , Convene at http://www.convene.com/, and WebCT at http://www.usfca.edu:8900/. You want to choose a courseware package that is transparent and user-friendly. It should have features that make uploading your course materials seamless and easy, and it should not require the instructor to be a technician. The package should allow for printed, text content but also for audio, video and other multimedia features. There should be space to keep the instructor's files, both files in use for a particular course and files that are not being used at that time. Instructors should have an online gradebook function. Threaded discussion boards and a virtual chat feature should be included in order to facilitate class discussion and participation. A group area should exist to enhance collaborative learning. Groups should have a private area in which to work on projects and exchange information. There should be a testing function where quizzes can be developed and taken online, loaded from a test bank, and automatically graded with feedback to the student and the grade transferred to the online gradebook. Each individual student should have an area in which to send files to the instructor, check their grades as recorded in the online gradebook, and develop a homepage.

Given all the issues we have discussed regarding taking learning online, the best courseware package should be chosen for the online course or program. Chances are this may be a university decision. If that is the case, faculty experienced in online learning should have significant input into that decision. Only faculty members know their needs for their online courses and programs and can give the administration valuable input when it comes to choosing the appropriate courseware package.

Conclusion

Distance learning makes education a possibility for millions of students. However, the learning environment is more intense, more learner-centered, and more demanding than the traditional classroom. By developing good guidelines and objectives, adapting exciting and useful course materials, making yourself accessible, and creating a learning community, both you and your students will enjoy the experience. Students and instructors have a lot to gain in the online classroom. What comes out of the collaboration transforms and empowers students to retain content, become involved and committed to the outcome, share in the success and failure of the course, and integrate the results into their personal lives. This is one of the most exciting aspects of online learning!

Table 1.

Suggested Collaborative Projects for the DL Environment

Activity	Interaction
Learning contracts	Between instructor and student; for participation
Discussion board groups	Between instructor and small group; among group

	members; for participation, team building
Capstone or culminating project	Between instructor and group; among group members; between groups; for closure, exploration, discovery, team building, communication, negotiation of understanding, elaboration and retention
Group Internet searches and sharing	Between instructor and group; between groups; for understanding, exploration and extension
Round robin or roundtable questions: input on issue--one group starts and passes on to the next group (could also be used individually)	Between instructor and individual; between instructor and group; for learning, participation, communication, discovery
Meet the Expert chat	Between instructor and group; between groups; for discovery, retention, understanding, clarification
On-line cybercafe (discussion thread or chat room)	Between students; between groups; for clarification, questioning, understanding
Press conference to launch capstone project to class	Between groups; instructor as observer; for communication, feedback, team building, closure
Group summary (of assigned reading) presented in discussion thread	Between group members; for understanding, clarification, communication, feedback
Original group posting in discussion thread related to topic or assigned reading	Between group members; for understanding, communication, feedback, clarification
Group Web Page (to introduce group or to introduce ideal work environment, etc.)	Between group members; for participation, motivation
Class Picture Gallery	Between instructor and students; for motivation, team building, community
Panel discussion (in chat room)	Between groups; for communication, team building, motivation

References

Bonime, A. & Pohlmann, K. C.. (1998). *Writing for New Media.* New York: John Wiley and Sons.

Brooks, J. & Brooks, M. (1993). *In Search of Understanding: The Case for Constructivist Classrooms.* Alexandria, VA: Association for Supervision and Curriculum Development.

Cranton, P. (1994). *Understanding and Promoting Transformative Learning: A Guide for Educators of Adults.* San Francisco: Jossey-Bass Publishers.

Gilbert, S. (1999). Online presentation, *Portfolio of Strategies*. http://www.tltgroup.org

Harris, J. (1994). Telecommunications training by immersion: University courses online. *Machine-Mediated Learning*. *4*(2&3). 177-185.

Khan, B. H. (Ed.). (1997). *Web-Based Instruction*. Englewood Cliffs, NJ: Educational Technology Publications.

Kilian. (1999). *Writing for the Web.* Vancouver, CN: International Self Counsel Press.

London, M. & Beatty, R. W. (Summer/Fall 1993). 360-degree feedback as a competitive advantage. *Human Resource Management*. 353-372.

Mezirow, J. (1991). *Transformative Dimensions of Adult Learning.* San Francisco: Jossey-Bass.

Myers, C. & Jones, T. (1993). *Promoting Active Learning: Strategies for the College Classroom.* San Francisco: Jossey-Bass Publishers.

Palloff, R. M. & Pratt, K. (1999). *Building Learning Communities in Cyberspace.* San Francisco: Jossey-Bass Publishers.

Pratt, K. (1996). *The Electronic Personality.* Unpublished doctoral dissertation. Human and Organizational Systems Program. Fielding Institute.

Sherry, L. & Wilson, B. (1997). Transformative communication as a stimulus to Web innovations. In B. H. Khan (Ed.), *Web-Based Instruction* (pp. 67-73). Englewood Cliffs, NJ: Educational Technology Publications.

Mid-South Instructional Technology Conference 2000
April 9-11, 2000
Panel Discussion

Title: Middle Tennessee State University's Experience in Evaluating On-line Course Management Systems

Panel Members:
Moderator: Barbara J. Draude; Office of Information Technology, Instructional Technology Faculty Support Liaison, Middle Tennessee State University
Lucinda Lea, Assistant Vice President for Information Technology, Middle Tennessee State University

On-line Course Evaluation Committee (OCEC) Members:
Carole Carroll, Associate Professor, Sociology and Anthropology
Maria Clayton, Assistant Professor, English
Janet Colson, Associate Professor, Human Services
Jackie Gilbert, Assistant Professor, Management and Marketing
Duane Graddy, Professor, Economics and Finance
Carolyn Hopper, Professor, Developmental Studies
Liz Johnson, Coordinator, Continuing Studies
Virginia Vesper, Assistant Professor, University Library

Abstract:
Many Universities are exploring the web-based world of on-line course delivery. This session will detail Middle Tennessee State University's experience in researching, evaluating, and adopting an on-line course delivery system for use on our campus. Following the establishment of resource and faculty committees, Middle Tennessee State University is progressing through an evaluation process where sample courses were designed, administered, taken and evaluated to determine the most useful on-line course management product to adopt and support.

Middle Tennessee State University (MTSU), as with many other Universities, has seen growing interest from its faculty and student body in using web-based resources to supplement teaching and learning. The Office of Information Technology (OIT) at MTSU recognized the need for encouraging and supporting the growth of on-line technologies in teaching and undertook an initiative to evaluate several of the leading on-line course management systems. Advantages of integrating an on-line course management system into teaching and learning include:

Ease of Faculty use. For those faculty interested in web based teaching/learning but who do not have the time or desire to learn "HTML language", an on-line course management system simplifies the authoring process. Most management systems include on-line assessment tools, discussion forums (bulletin boards, chat capabilities, etc.), and on-line gradebooks combining faculty tools into one package. Ease of student use. Students can easily find and use course materials and learning activities within an on-line course management system. Consistency of interface. An on-line course management system, while allowing for some faculty individuality, allows for a common interface for students taking multiple courses. Beginning in summer 1999, MTSU's OIT spearheaded a project to evaluate and adopt an online course management system (or course shell), that they in turn would support. The process began with the establishment of a resource committee consisting of instructional technology support people: instructional technology specialists, academic technology managers, the Continuing Education on-line coordinator and several faculty. This committee investigated leading programs that were available on the market. The investigation consisted of a literature review, discussions with vendors, and compilation of personal experiences with schools/faculty who had used the various programs. The list of possible programs was narrowed to three (CourseInfo 2.0, WebCT, and Web Course in a Box) based on available features, support and cost. Three members of the resource committee were recruited to learn

the programs and create sample mini-courses in each of the three software packages. Evaluation copies of each of the programs was obtained and loaded onto University servers.

In the second step, a faculty committee, representing all University colleges and varying levels of technological experience, was established. The committee was divided into three subcommittees and charged with "enrolling", as students, and progressing through a mini-course in each of the three programs. Orientation sessions were held for each subcommittee on how to access and progress through the mini-courses. Instruction was also given on course design and the faculty were invited to develop course materials of their own on the University's evaluation copies of the programs. The committee was given seven weeks to complete their evaluations.

The third step of the project involved gathering data from the committee members. The gathering of evaluation data occurred in three parts. Initially, the committee members were asked to fill out an on-line questionnaire that asked them to identify essential features required by an on-line course management system. Numerous features were listed and committee members were asked to rank each feature as "highest priority", "neutral", or "low priority". A list was then complied of the features considered the highest priority or most valuable.

The second component of data gathering asked committee members to rank the three programs as to how they met the categories of features. They were asked to rank each program (1= most favorable, 2= moderately favorable, 3=least favorable) and the ratings were then totaled; the lowest scores being the most favorable. The final component of the data gathering asked for committee members to give their overall impression of the programs by ranking them, using the same scale (1= most favorable, 2= moderately favorable, 3=least favorable). The results were again totaled: CourseInfo 21 pts; WebCT 40 pts; and Web Course in a Box 43 pts. Following the completion of the evaluation steps, the committee met and discussed the results. The overall program rankings and discussion of comments submitted by committee members, the committee's decision was to recommend the Blackboard CourseInfo product to the Assistant Vice President for Information Technology for adoption and support.

Mid-South Instructional Technology Conference, Spring 2000

Interactive Television Pointers from Three First Time Presenters

James A. Buckenmyer
David A. Kunz
Jack L. Sterrett

Abstract

Three professors from the Harrison College of Business at Southeast Missouri State University were "first-time-presenters" of a new ITV initiative at the College. The following is an introduction to these professor's experiences. A common outline has been used so that the various aspects of the experiences can be compared.

The professors have described their experiences. They have identified some of the drawbacks and limitations of the experience. Each professor has also offered some tips for other "first time" presenters.

Equipment and Classroom Setup

The classes were taught in a classroom specifically designed for ITV. The campus classroom contained:

An infrared tracking camera (for the instructor)

An instructor microphone

Two front mounted remote controlled cameras for students.

A rear mounted very large screen monitor approximately (4 feet by 6 feet) for the viewing the remote sites - this monitor could view one site at a time or could view up to four remote sites simultaneously

Two rear mounted large screen monitors

One showing the outgoing signal

One showing the incoming signal

Two front mounted large screen monitors showing the remote sites

Hanging microphones in the classroom for classroom pickup

A pentium equipped computer

Internet connected

Power Point Equipped

Equipped to accept other specialized programs

An ELMO document camera

A VCR

A Slide Projector

A front mounted power driven glass beaded viewing screen

A lighting dimmer located at the front of the classroom

A lectern

For each class a student technician was assigned to operate the equipment. The student technician remained with the class/instructor for the entire semester. They were well trained at trouble shooting the system.

Each remote site was equipped with a number of large screen monitors depending upon the size of the room. The remote sites had voice activated microphones and three cameras, one front mounted, one rear mounted and a document camera. The rear mounted camera was not usually operated unless the instructor visited the remote site to teach a class. The remote sites had a student who was responsible for learning the operation of the equipment. These students were not as well trained as the classroom technician.

The sites were also linked by phone and fax (often external to the room) in case of an equipment malfunction. The phones and faxes were not always operational during the evening classes.

To distribute materials from the campus location to the remote sites and vice versa, a courier service was maintained. Additionally, in some cases, some students from the remote sites also attended class on campus. They occasionally acted as couriers also. The courier service was operated on a Monday, Wednesday and Friday schedule.

Dr. James A. Buckenmyer, Professor of Management

Course Title, Level, Meeting Day, Time and Particulars

MG 301 Management and Organization (The beginning Management Class [a required core business class for all business majors.)

Third Year

Wednesday, 7:15 to 9:50

This course is a content ladened course. It is the combination of what had previously been the Principles of Management and Organization Behavior courses. Student learning and retention of the materials presented in this course are tested annually through a nationally normed test (MFAT) usually administered in the student's last semester (During the Business Policies and Strategies, the capstone business course.). What the test content will be is not known to the faculty and, therefore, the test is not taught. There is some concern on the faculty members' part that the students perform well on this test.

Faculty Background and Experience

The faculty member was a seasoned full professor in Management. His has a D.B.A. in Management and Organization Behavior. He has been teaching for more than 35 years, at three different regional Universities, all in the "Midwest."

Part of his teaching experience included a video taped TV studio experience teaching a Principles of Management Course in 1982. The video taped class was prepared to be presented as a taped class on the regional cable channels. It was taught before students in the studio (i.e., before a live audience). The studio classroom, equipment and operation were part of the support for a Broadcast Television Master's Degree Program. The master's degree candidates gained real time experience (and internship credit) for their support of the video taping.

The studio classroom had three floor cameras, all with camera operators and assistants. Microphones were mounted in the ceiling. The professor's microphone was hard wired (with a wire up through his pants leg). There was also a floor manager. The teaching equipment included rear screen projection unit for document presentation (controlled by an engineering staff.) as well as an "electronic chalkboard." There were also two television monitors mounted on either side of the very large rear projection screen. The classroom also had a flip chart.

The control room utilized a producer, director, picture controller, sound mixer, and an engineer. Behind the scenes there were additional technical support people.

Because of the required coordination between the control room, floor manager, engineering staff and the professor, it was necessary to script the entire classroom presentation. Scripting was also necessary for the preparation of the materials to be projected on the rear projection screen as well as the electronic chalkboard. Since the engineers were not located in the control room and since there were more than 130 items to be projected whether on the rear screen or electronic chalkboard, the engineers needed a script to follow. The script was actually a narrative outline, that is, a very complete outline in which examples, and other materials were scripted. It was not a full narrative script.

The professor has had some "real world" experience, both in industry and as a consultant.

Preparation for Teaching the ITV Course

Because of the previous experience in teaching on TV and because of suggestions gotten at the Midsouth Teaching Technology Conference, 1998, the professor attempted to script the class. The script consisted of approximately 175 pages (parts double spaced and parts single spaced). It was accompanied by more than 70 overheads/handouts. A textbook was assigned for the course.

The "Teaching Outline" (script) included topical outlines, outline detail (Including listings of factors to be covered), examples and supporting quotations from various works outside of the text book. In general, the outline did not mirror or follow the textbook. Basically, the teaching outline was based on more than 35 years of teaching the subject. A course outline, based on the teaching outline was provided for the students. The text book chapters covered by each section of the course were indicated for the students. An extensive number of overheads/handouts were prepared from the outlined material (As noted above, more than 70, most of which were prepared by the instructor, not those provided by the text book publisher.). The overhead/handout printouts generally followed the six line, six work suggestions for ITV overhead (power point) although some were significantly longer and more detailed.

The scripting was based on the teaching materials which had been accumulated over the years. It was prepared in an outline form to permit the classroom presentations to be spontaneous and to avoid the appearance of "canned" lectures. Often two or three examples (Many drawn from typical student experiences and from the instructor's industrial, academic administrative and consulting experiences) were used. The students were particularly positive about the examples.

Classroom Teaching Style

Because this was a content ladened course and because of the instructor's particular additions to the already voluminous subject matter, the course was taught very heavily through lecture with encouraged

student questions and discussion. Quite honestly, it was very much instructor controlled.

The instructor is known as a very enthusiastic, animated, active, mobile, and loud presenter. (One student at a remote site stated, "You don't have to yell at us!" Other students indicated in evaluations that they appreciated the vibrance and enthusiasm of the instructor.) The instructor attempted to use humor in the presentations, particularly in relation to the examples drawn from the typical student's experience.

The only interaction in the class was the interaction between the students and the instructor in response to questions, either from the instructor to the students (sometimes at the various remote sites) or from the students to the instructor (often from the remote sites). No individual or group activities or other planned interaction between the remote and on campus site were utilized.

Faculty Observations About the Experience

Special Approaches

There were no special approaches utilized in this class. However, based on student preferences, power point was not used. As noted earlier, there were extensive handouts used. These were used in preference to being used as overheads for which they had been designed because of some "build in' lighting problems. The photocopy budget for reproducing the "overheads as handouts was a killer.

Classroom Teaching

No special classroom teaching approach was used. The instructor utilized his normal stand up and blast it out approach.

The instructor did feel somewhat constrained by the equipment. (Although this may have been somewhat psychological). He felt that his ability to freely move around the classroom was restricted by the need to constantly refer to the "script" so not to confuse the ordering of the handouts. There just seemed to be something in the set up of the room which made me feel uncomfortable and maybe a little intimidated. The feeling never abated through the entire semester.

It was impossible to simultaneously send signals of the document camera and the instructor. Additionally, if the overheads were used as overheads the classroom lights had to be their dimmest for the local students to see them. If the classroom lights were their dimmest, the remote students could not see the instructor. This restricted the use of the document camera.

The white board also caused some problems. Unless the camera was zoomed in on the board the students at the remote sites could not see the board, regardless how dark the markers were or how large the instructor wrote. There was too much light reflection from the board. With the camera zoomed-in on the board the space available for writing was limited. Under normal circumstances the instructor has the entire board filled with scribbling and diagrams.

Student responses were generally quite favorable. The primary responses were related to the few technical difficulties that were experienced and the fact that the white board could not be seen by the students at the remote sites.

Student Activities

No individual or group activities were conducted.

Examinations

There were two examinations of five essay questions each. They were applications questions. The students were given situations and asked what they would do in these situations. This is the professors normal examination procedure.

The remote site students were monitored through the television from the campus site. Each remote site location had an assigned student who handed out the examinations at the exam time. They were sent to the remote site locations in a sealed envelop. This was not an altogether satisfactory solution to monitoring the examinations

Problems

There were a few **equipment** problems. The biggest of these problems was the size of images of the students on the instructor's monitor. Although the screen of the monitor was approximately 4 feet by six feet, when the monitor was split four ways (to cover the two remote sites) and with the distance that the cameras were from the students it was nearly impossible to identify individual students. Secondly, with the two monitors in the front of the room showing the remote sites at all times the on-site students were often distracted by movement at the remote sites. Once there was significant microphone feedback problems between the two remote sites. The students at the remote sites were not aware how to manipulate the cameras or microphones. We lost both sites several times. At times either just the sound or the picture was lost. At times both were lost.

There was a few **site** problems as well. As indicated above, the cameras were located so far from the students that it was impossible to identify individual students. At one site (a high school) the janitor tried to kick the students out and lock up the room 45 minutes before the class was scheduled to end. Of course his rather boisterous statements activated the microphones and the entire altercation was broadcast over the entire network. It did not happen once, but twice.

Support problems were evidenced also. The remote site locations did not have equipment technicians available. The "trouble" and fax phone numbers we had were day phone numbers (in most cases). Even when we were able to obtain night phone numbers, the phones often were not attended. Although this instructor has little difficulty with the courier service it was necessary to prepare materials a week in advance to get them copied and to the remote sites in time for the class. There was also a significant delay in getting any materials from the remote sites to the campus.

The on-campus technical support in the classroom was very good.

The on-campus support for creating, preparing, of teaching materials and pedagogy was nonexistent. We were told "Just do it." There was no preliminary released time for preparation nor was there released time during the semester. Creating the 175 page "script " and accompanying 70 handouts was an extremely time consuming activity. Ti took the entire previous summer, plus.

Student Observations

Student responses were generally quite favorable. As anticipated, the remote site students were them most enthusiastic, primarily because they did not have to travel the 60 miles to attend the class. One student sent an e-mail to the instructor indicating that he was not a television person, had not expected to like the class but was enthusiastic about the class. Another student commented, in writing, that the instructor "had a gift" for teaching in this way and should continue offering the course. Another student thanked the instructor for offering the course. Several on site students also made positive comments about the class. All in all, the instructor received more positive written comments about this class than he has ever received before for any class.

Suggestions for Improvement

Improve the flexibility of the electronic transfer from screen to screen and location to location

Improve the transferring of hard copy materials from location to location

Place overheads/handouts on web page.

Place spotlight on camera (to use when lights must be dimmed for use of front projection screen)

Possibly a rear projection screen

Possibly an "electronic chalk board"

Suggestions for New ITV Teachers

Do extensive preplanning for the class

Do class preparation at least two weeks in advance

Use extensive overheads/handouts

Make student hard copies available for all overheads/power point

If power point is used keep it clear, simple and uncluttered and do not flash it too quickly

For textual or detailed materials use hard copy handouts

Be sure of the ownership and disposition of any tapes of the class

Conclusions

There was no notification that this class was to be a ITV class. The class was just assigned as the night section of MG 301. During the spring semester, while explaining what I was to be teaching in the fall someone observed, "Oh, that's the ITV class." That is not the way to learn you are teaching ITV. After consideration, the summer was dedicated to preparing the script for the class. I still approached the class with considerable trepidation. During the entire class I was somewhat uncomfortable about the class. The class was not going as I felt it should have been going. Something just did not feel right. This was even mentioned to the in-class technician (trained student). He assured me that everything was OK. His evaluation apparently was better than mine. The class appears to have been very well received. The grades were the best I have ever given - more A's and fewer D's and F's. And the student evaluations were the best I have ever received.

Although I did not look forward to teaching the ITV class I have volunteered to teach the next section of MG 301 to be taught on ITV. If I were asked to teach any other ITV class I am not sure of my reaction. There are several other classes in my repetoire that are presently almost scripted (including numerous overheads) which may be possibilities for future ITV, but I am still not sure what my reaction would be.

David A. Kunz, Professor of Finance

Course Title, Level, Meeting Day, Time and Particulars

FI361 Financial Management: The beginning finance class, a required core business class for all

undergraduate business majors.

Meeting Schedule: Monday, 7:15 - 9:50 p.m. (16 week semester)

Enrollment: Thirty-six students were enrolled in the class at the broadcast site and four students were enrolled at one remote site.

Catalog Description: Financial structure and problems of modern business corporations. 3 credit hours. Junior standing.

Course Objectives

1. To survey the principles underlying the financial practices and the financial management of modern business organizations. To learn fundamental financial principles, generalizations and theories.

2. To gain knowledge: terminology, classifications, methods, and trends.

3. To apply course material to improve rational thinking, problem solving and decision-making.

4. To develop specific financial skills and competencies.

5. To emphasize the importance of financial management as it applies to financial activities and how financing decisions impact company profitability.

6. To overview capital markets and investments and their role in financing business organizations.

7. To develop writing communication skills in financial management.

Faculty Background

I am a full professor, with nine years teaching experience. Prior to becoming a full-time academician I was employed in private industry for 19 years. Industry experience included positions as Chief Financial Officer, Treasurer, Vice President of Finance, Controller and a board member for two companies. In addition to a PhD in finance, I am a Certified in Financial Manager (CFM) and Certified in Management Accounting (CMA) Teaching experience includes courses in finance principles, corporate finance, and small business finance. Accounting courses and business strategy courses are also taught. I am an active small business consultant.

Preparation for Teaching the ITV Course

Preparation for the course included attending conferences that involved workshops and presentations on ITV teaching. The University also provided two training programs to acquaint the new instructors with classroom technology and procedures.

I had previously taught subject course numerous times. No special documents, exercises, or other teaching aids were developed for this course. Traditional teaching tools include: 1) lectures supplemented with PowerPoint presentations and financial websites, 2) video tapes, 3) problem review and discussion, and 4) presentation of student research projects.

Classroom Teaching Style

A discussion format is used. All teaching activities are interspersed with questions, illustrations and discussion of concepts and how they apply to business situations. This keeps the students engaged but

requires that I to move around the front of the classroom, frequent changes in the presentation mode (computer - PowerPoint, websites, video, board presentation - problem solving), and classroom lighting.

Faculty Observations About the Experience

The classroom experience was not substantially different than the "normal" course. The fact that I had a web site made the distribution of course materials relatively easy. The use of an instructor website eliminates or minimizes one of the major obstacles that must be overcome when teaching an ITV course, distribution of class materials. Syllabus, class schedules, assignments, and other course "handouts" were made available via the Internet. Students were free to print the information as needed. The use of PowerPoint presentations, tapes, Internet sites during class, except for remote site student presentations, created no unusual challenges. The problems associated with remote site student presentations will be addressed later. The course does involve solving problems and working selected problems on the board for instruction and discussion. This required a change. The white board and lighting created a glare that prevented the camera from projecting readable material to the remote site. To solve this problem, solutions were recorded on paper and the overhead projector was used to send the material to the remote site and to project the material on the screen in the classroom. This solved the "glare " problem but did limit instruction... but I adapted.

Since a discussion format requires a great deal of student interaction, I was concerned about the participation of the students at the remote site. This was not a problem. The students at the remote site participated more frequently than those in the broadcast classroom. I did not make a special effort to include the remote site.

The biggest challenge was the distribution of quizzes and exams to the remote site. The courier service at the beginning of the semester proved to be unreliable. Service improved as the semester progressed but this remained the biggest obstacle to orderly instruction. I never knew if the sent material was received until the beginning of class.

Student presentations require the use of PowerPoint and Internet sites. This required adjustment for remote site presentations since the remote classroom did not have a computer. Remote presentations were accomplished by allowing the remote site students to use slides prepared using PowerPoint and copying Internet sites. Slides were transmitted to the broadcast site using an overhead projector. This method was not as effective as student presentations from the broadcast site but it was a workable solution.

Examinations and quizzes were accomplished by sending the required material to the remote site in a sealed package via the courier. One student at the remote site was designated as the material coordinator. The student was responsible for collecting the material and bringing it to the classroom. The student also distributed and collected material in the classroom for return to the broadcast site. While this did not prove to be a problem, the use of a student to handle exams and quizzes is not an ideal arrangement.

A student technician was present during each class session at the broadcast site so I did not need to be concerned with operating the equipment. Each class was video taped in case the broadcast was interrupted for any reason. The tape was never used; no technical difficulties were experienced during the semester. Teaching the course without the technician would have been substantially more difficult.

Suggested Improvements

In addition to an improved distribution system, and a non-student coordinator at the remote site, an on-line grade book and on-line testing would facilitate teaching an ITV course.

Suggestions for "first time" ITV Instructors

Be organized. Logistic requirements place a premium on advanced planning. Each class needs a detailed

schedule. In addition, I had the complete semester schedule available the first night of class.

If you don't have a web site, get one. Without the ability to electronically distribute course material, logistic challenges increase exponentially. A web site and on-line quizzes and testing would eliminate most, if not all, logistic issues.

Since teaching the course, I have started using an on-line grade book. This has proved a useful tool in regular classes but would be exceptionally valuable for an ITV course.

Avoid teaching to the camera. I made no special concessions to the camera and none were needed. Teach as if the camera is not there.

Establish communication with students via e-mail. E-mail is a useful communication tool for all students but is particularly valuable for students at the remote locations who are not on campus regularly.

Remote site student presentations were a challenge. If there had been a larger number of students at the remote site (more than the four I had), I would have required the students to come to the main campus for the presentations or restructured the assignment.

Although I did not have a team assignment, this too could prove to be a challenge. I am not recommending eliminating team projects but they may need to be handled differently than in a traditional classroom setting.

Conclusions

Teaching an ITV course requires the instructor to be organized. I would not hesitate to teach the course or another course again.

Jack L. Sterrett, Professor of Marketing

Course Title, Level, Meeting Day, Time and Particulars

MK301 Principles of Marketing: The beginning marketing class for all marketing majors and minors, and a required core business class for all undergraduate business majors.

Meeting Schedule: Tuesday, 7:15 - 10:00 p.m. (16 week semester)

Enrollment: Thirteen students were enrolled in the class at the broadcast site and eight students were enrolled at two remote sites.

Catalog Description: A managerial approach to marketing focusing on matching organizational goals with customers needs in an ethical and socially responsible manner. Junior standing

Course Objectives.

1. Provide a sound basis of marketing information and understanding for the development of professional competence in marketing and other related activities.

2. Provide the basis for understanding marketing as a central part of the business process.

3. Demonstrate to the student how marketing principles apply to non-business situations.

4. Develop an understanding of marketing as an economic and social process, and of its role in a free enterprise economy.

5. Enable students to understand the numerous controversial questions arising out of the performance of marketing functions so they may more intelligently exercise their prerogatives of citizenship.

Faculty Background

I am a full-professor with 25 years teaching experience. I have also served in a number of academic administrative positions including my current position as Chairperson of the Department of Marketing and Director of the Center for Entrepreneurial Studies and Small Business Management. I also maintain involvement as a small business consultant.

Preparation for Teaching the ITV Course

Preparation for teaching the ITV course was somewhat limited. I did attend one Mid-South Conference and two ITV training sessions on our campus to become acquainted with the classroom technology and various delivery methodologies, strategies and techniques.

Having taught the Principles of Marketing course at least once a year for the past twenty years, I was well acquainted with the subject matter and have utilized a variety of approaches in teaching the subject matter. Given my teaching style, along with plenty of advice from the literature, I took a fairly traditional approach in terms of teaching the course utilizing a great deal of the supplemental instructional package (Power Point, video tapes, suggested Internet activities and websites) available with the text. No specific material modification was necessary. I also required various case and article assignments/discussions. I personally felt more comfortable, this first time around, maintaining a lecture/discussion format with very limited group/team assignments. In the end, I believe this approach worked best for me and the students. I will plan to include more team assignments if future ITV opportunities arise.

Personal Observations About the Experience

Given my personal teaching style and preferences, I did not find the ITV experience to be much different than any other teaching experience other than I did have eight additional students at two remote sites that I needed to be cognizant of and an on-premise technician who was responsible for operating the equipment to ensure the best quality broadcast as possible. The technician would have the remote sites accessed prior to each class session and would have the responsibility at the broadcast site for light control and for switching of the equipment from Power Point to video to Internet to Elmo (3 dimensional overhead projector), whatever my teaching methodology/approach was for any particular evening.

The key to being successful with ITV (advise from another ITV colleague) is to teach to the students who are immediately in front of you while at the same time, being aware of the students at the various remote sites.

During the first meeting of the course students were introduced to my instructor website in which the course syllabus, semester class schedule, assignments, article, and other course materials were made available. Students could refer directly to my website and/or print the various documents directly from the website. I found this approach to be most effective and efficient. From time to time I could post various notices to the course bulletin board and would also alert students via e-mail of special notices, announcements, assignments, suggestions, etc. The one major drawback for some students at the remote sites to this approach however was that the remote sites were not computer accessible nor were computer labs readily available to them during the time of broadcast. This scenario was not a significant problem for the majority of the semester. There were a number of occasions however in which I would direct my on-campus class to meet in the instructional computer labs for instruction while the students at the remote sites would be provided with instructions on my website and expected to complete the assigned activities on their own.

A facsimile machine was also available in the broadcast classroom and at the remote sites. From time to time its use was necessary as a backup to our courier system which was available for mailing of hard

copy when necessary. In terms of the courier system, this perhaps was the one situation that personally presented the most frustration. The courier system was reasonably unreliable and did present problems at examination times. Also, as a backup to the entire process, each broadcast was videotaped in the event of audio and/or visual failure.

For examination purposes, each remote site had one designated student class facilitator who had the responsibility of retrieving the examinations (and other materials) from the designated courier drop-point. Examinations were generally forwarded to the remote sites in advance of the designated examination date. On the examination dates each facilitator would open both the sealed courier package containing the examination package and the sealed examination package in front of the camera in order for the instructor to see. Although not fool-proof, this process presented some sense of security and relied on trust. Upon completion of each examination, each class facilitator had the responsibility of returning all examination materials appropriately sealed to the courier drop-point for return to campus. On-line testing would be a significant improvement in the future.

Suggestions for "First Time" ITV Instructors

Teach to the group immediately in front of you (colleague advise) while being aware of students at the remote sites. This, I believe is great advise while becoming comfortable with the ITV process.

Be yourself! Initially this may be more difficult while becoming acquainted with ITV, however, I believe this helps in terms of organization and ultimate personal and student performance. Nothing is really different.

Be prepared and organized with course materials and semester schedule at the outset. Provide materials via a personal website and utilize e-mail with attachments when necessary and viable.

Develop on-line testing capabilities. This would help maintain integrity of the testing process, assuming the remote sites were computer accessible and students could be viewed via the ITV system while completing examinations.

Seek feedback more frequently from students at each ITV site to ascertain what works and what doesn't. Don't be afraid to change or modify your classroom methodologies and techniques.

Visit each remote site at least once throughout the term. This, in itself, is an experience.

Conclusions

Teaching an ITV course is an experience that requires some flexibility on the part of the instructor, as well as students. The instructor needs to be in control and the one who sets the appropriate tone from the outset if students are expected to be reasonably flexible with this type of delivery system. Equipment problems, and others, more than likely will be encountered and will impact students at each site. The professor's positive and flexible demeanor is important from the outset.

New Directions in Foreign Language Learning: Faculty Development at the University of South Carolina

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Abstract: Foreign language instructors are some of the most innovative teachers in education today, and educational institutions worldwide are encouraging their foreign-language faculty to increase their use of technology in the classroom. To that end, The University of South Carolina has created a new role for the Academic Director of its Foreign Language Learning Center. The Director oversees a Faculty Development Center for faculty interested in incorporating technology into their curricula. The Center provides an area where interested faculty can develop courseware, design and maintain Web pages, work with audio and video, and simply experiment with instructional technology in a non-threatening environment. In addition, the Center offers a series of IT workshops geared specifically towards foreign-language faculty. This article outlines the nature of the Center's faculty development efforts.

Introduction

In their article, "Teacher Training for CALL and its Implications", Curtin and Shinall (1987) assert that "to ignore advances in technology is to be left behind" (p.256). This is especially true for today's teaching faculty. Not only do instructors in traditionally technological fields, i.e., physics or engineering, need to be current in their knowledge of instructional technology, but faculty in the humanities and social sciences are now equally expected to incorporate technology into their curricula. This challenge fills some faculty with a sense of dread, afraid, as they are, that the computer will sound the death knell for their profession, while in others, it incites a whole new love of teaching and curriculum design. What accounts for the former's "technophobia" is often the result of a lack of familiarity with very basic technology. A substantial percentage of the teaching faculty in foreign language has followed traditional "book-based" programs and, in fact, there are still relatively few institutions in North America that offer an instructional technology component to their graduate foreign language programs. Such programs tend to be literature-based, and, if there is any teacher training at all for graduate teaching assistants, it is often woefully lacking in any mention of, or instruction in CAI or other technological applications for teaching. Nevertheless, asserts Michael Bush (1997), "ready or not [. . .], technology will play an ever-increasing role in each of our institutions. It therefore behooves foreign language education professionals to better understand technology and its potential for foreign language learning" (p. xiv).

The result of the present system is that many foreign-language Ph.D.'s enter new assistant professorships without having any real knowledge of technology-enhanced instruction. Furthermore, the pressure placed on new faculty to produce a significant amount of research in order to attain tenure does not leave them with much time to try out new technologies or to be particularly creative with their teaching. Many of the same traditional departments that do not offer adequate training in teaching with technology are also reluctant to accept research done in this area as meeting the criteria for tenure: "Without an excellent research record, one cannot expect a promotion in other than teaching institutions. However, in teaching institutions the teaching load is so high [...] that there is insufficient time" (Solomon, 1994, p.29). Thus the cycle continues.

A New Approach

How, then, do we remedy this situation and assist foreign-language faculty in incorporating technology into their curricula? The University of South Carolina in Columbia has addressed this concern by creating a new job-description for the Academic Director of its Foreign Language Learning Center. While the position to this point has been strictly administrative, the new job description calls for a foreign language professor as well. In addition to fulfilling the traditional administrative role of center director, the new position carries an instructional component. The director must teach one course per year in her area of expertise, in this case German or French language, and must design and hold a series of faculty development workshops covering a variety of topics in instructional technology.

According to the Department of Education's 1993 paper, "Using Technology to Support Education Reform", the challenges faced by today's faculty include:

- Learning to use a variety of technology applications;
- Using, adapting, and designing technology enhanced curricula to meet students (sic) needs;
- Expanding content knowledge;
- Taking on new roles; and
- Responding to individual students.

(Means, 1993, http://www.ed.gov/pubs/EdReformStudies/TechReforms/chap4c.html)

Furthermore, Kassen and Higgins (1997) include the following necessities in their list of requirements for faculty

development programs:

- Establishing a comfort level with technology;
- Integrating technology into the curriculum;
- Developing the critical skills to use technology effectively. (p.264)

These are the criteria to which I, as the Center director, adhere in designing my faculty development workshops. The first three workshops I conducted concentrated on uses of Microsoft PowerPoint in the foreign language classroom. Two following workshops served as introductions to HTML and to some commercially available HTML editors. Other workshop topics include a series on teaching with the World Wide Web and hypermedia, authoring programs and courseware creation, and how to work effectively with email and discussion groups. My intention is to provide the foreign language faculty at the University of South Carolina with as much variety and as many topics as possible in the workshop series so that they will be able to decide for themselves which applications fit best into their curricula and teaching styles.

Faculty Development

Workshops are set up in the following manner: notices are sent out a month in advance of each workshop, and faculty members are asked to sign up to participate. Attendance is generally capped at ten so that there is adequate time and space for each participant to receive individual attention. The workshops are held in the Foreign Language Learning Center Computing Lab. Participants each work on their own computers, and, depending on the subject of the workshop, are able to choose between PC and Macintosh platforms. The instructor machine is connected to an LCD projector, and the desktop image projected onto a screen. Workshop participants are asked to follow along with the instruction for the first half of the workshop, and are then "turned loose" in the second half and encouraged to work on their projects on their own.

One of the more important aspects of incorporating new technologies into the foreign-language classroom involves identifying student needs and subsequently tailoring the use of technology to them. For example, the student who is a visual learner will likely respond more positively to a multimedia-based grammar lesson that includes several colorful illustrations, while a student who learns a language more easily through aural channels may prefer an application with plenty of audio examples, and so on. The workshop series takes these particularities into consideration and illustrates teaching techniques that utilize several media. Individual professors are free to design their projects using as many or as few media types as they wish. Naturally, the more media types an instructor can include in her educational materials, the more students she will reach and, thus, assist in language acquisition.

In addition to the workshop series, foreign-language faculty have access to the new Faculty Development Center (FDC), which is equipped with two high-end PC's and one Macintosh G3. Hardware peripherals available to faculty include a flatbed scanner and CD "burner". Software available to faculty in the Center include *Microsoft Office 2000 (Developer's Suite, Authorware, Adobe PhotoShop, Hyperstudio*, etc. The setup of the FDC makes is a comfortable and inviting place for faculty to familiarize themselves with various technologies in a low-stress environment. Moreover, the director is available full time to assist faculty with questions regarding the pedagogical advantages of particular programs or courseware designs.

Evaluation

An important aspect of any educational venture is ascertaining whether, in fact, the material covered by one's students is actually learned, and, in the case of faculty development, subsequently used by instructors in their classrooms. In order to measure these criteria, the following questionnaires are distributed to workshop participants, a) immediately after the workshop (Fig. 1), and b) at the end of the semester following the workshop (Fig. 2):

1=agree strongly 2=agree 3=disagree 4=disagree strongly 5=no opinion

Question	Av. Response (24 Respondents)
The workshop was helpful to me.	1
I will use the technology covered for my teaching.	1.5
The material covered was easy to follow.	1.16
I would recommend this technology to my colleagues.	1
I would like to learn more about the technology covered.	1.3
I plan on incorporating more technology into my teaching.	1.3

Figure 1: Questionnaire A – distributed immediately after the workshop.

In which workshop(s) did you participate?

_____

1=agree strongly 2=agree 3=disagree 4=disagree strongly 5=no opinion

I have used the information learned in the workshop(s) I took.

I used the project(s) I produced in the workshop(s) in my teaching.

I regularly use multimedia in my classroom

Since taking the workshop(s), I spend more time in the Language Center.

I encourage my students to submit their assignments electronically.

I require my students to work in the Language Center.

My students receive an orientation to the Language Center each semester.

I plan to continue using technology in my teaching.

I plan to take more instructional technology workshops.

Figure 2: Questionnaire B – distributed at the end of the semester following the workshop.

As the workshop series has only been ongoing for one semester, questionnaire B has not yet been distributed to foreign

language faculty. Initial results of questionnaire A are promising, however, and workshop attendance has progressively increased throughout the course of the first and second semesters. An increasing number of faculty are making use of the FDC for projects such as a virtual tour of France, and an instructional video for students of Italian. While the results of these surveys do nothing to indicate the efficacy of the various technologies used, one must recall that the ultimate goal of these questionnaires is to ascertain whether foreign language faculty are increasing their use of technology both in terms of quantity and variety. Accurate measurements of technology's effectiveness in improving language learning are notoriously difficult to attain (see Ehrmann 1997 & Trotter 1999), and will not be sought in this series of evaluations.

Conclusion

Traditionally trained foreign language faculty must be given the opportunity to develop their teaching skills in a non-threatening environment where support is available if it is necessary, and where creativity is encouraged and appreciated. All too often, faculty balk at attempting to incorporate technology into their curricula because the amount of technology available is too staggering and the amount of time necessary to learn it is simply unavailable. A program like that currently in place at the University of South Carolina removes some of the unknowns that prevent many instructors from introducing technology into their courses by allowing them to take the technology for a "test drive" ahead of time. Teachers are free to use the technology introduced according to their own personal instructional needs and wishes. Moreover, while individual departments often hesitate to purchase equipment such as scanners and digital cameras along with large presentation programs for only a few interested faculty, housing such tools in a central location such as the Language Learning Center, allows faculty from all language departments access to them when they need it. Ultimately, I hope that all foreign language teachers at the University of South Carolina will feel comfortable enough with instructional technology to make it a part of all of their courses. In the meantime, it is encouraging to see language professors attending the workshops, working in the Faculty Development Center, and taking an interest in what they can do with technology in the classroom, as well as what technology in the classroom can do for them.

References

Bush, Michael. (1997). Introduction, *Technology-Enhanced Language Learning*. (pp. xi-xviii). Lincolnwood: National Textbook Company.

Curtin, Constance O., & Shinall, Stanley L. (1987). Teacher Training for CALL and Its Implications. In Wm. Flint Smith (Ed.), *Modern Media in Foreign Language Education: Theory and Implementation* (pp.255-285). Lincolnwood: National Textbook Company.

Ehrmann, Stephen C. (1997). Asking the Right Question: What Does Research Tell Us About Technology and Higher Learning? In *The Annenberg/CPB Projects Learner Online*, (http://www.learner.org/edtech/rscheval/rightquestion.html). Washington, DC: Annenberg/CPB Projects.

Higgens, Christopher J., & Kassen, Margaret. (1997). Meeting the Technology Challenge: Introducing Teachers to Language-Learning Technology. In Michael D. Bush, & Robert M. Terry (Eds.), *Technology-Enhanced Language Learning* (pp.263-285). Lincolnwood: National Textbook Company.

Means, Barbara, et al. (1993). Using Technology to Support Education Reform. In *U.S. Department of Education Publications and Products*. (http://www.ed.gov/pubs/index.html). Washington, DC: U.S. Department of Education.

Solomon, Martin B. (1994). What's Wrong with Multimedia in Higher Education? In *International Association for Learning Laboratories IALL Journal of Language Learning Technologies*, 27 (2), 27-33.

Trotter, Andrew. (1999) Preparing Teachers for the Digital Age. In *Technology Counts '99*, 19 (4), http://www.edweek.org/sreports/tc99/articles/teach.htm.

Andragogy and Technology: Integrating Adult Learning Theory As We Teach With Technology

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Abstract

Introducing technology into the curriculum means more than just "making it work." The principles of adult learning theory can be used in the design of technology-based instruction to make it more effective. Malcolm Knowles' theory of andragogy allows teacher/facilitators to structure lessons which are part of a relevant learning environment for adults students.

Introduction

Higher education has given priority to the integration of technology into the curriculum. As this has occurred, institutions are faced with the many issues that surround making the lessons succeed technologically. Faculty must spend time learning how to use the technology and ensuring that adequate institutional support is present to make the technology work. It is, therefore, easy for the instructional design of such curricula to be put on the side while we get technology issues "under control." Faculty need to focus on learning theory in the design of instructional technology so that they can create lessons that are not only technology-effective but that are meaningful from the learner's standpoint. Malcolm Knowles' theory of andragogy outlines effective methodologies for adult learning. When this theory is integrated into the design of technology-based learning environments it is possible to create lessons that not only serve the needs of students to use the latest technology but also focus on their requirements as an adult. Andragogy includes ideas such as an adult's readiness to learn, the role of the learner's experiences, the faculty member as a facilitator of learning, an adult's orientation to learning, and the learner's self concept.

What is Andragogy?

Andragogy is a set of assumptions about how adults learn. Its roots can be traced back to Alexander Kapp, a German grammar teacher who used it to describe Plato's educational theory (Knowles, Holton, and Swanson 1998, 59). It appeared again in 1921 when another German, Social Scientist, Eugen Rosenstock claimed that "adult education required special teachers, special methods, and a special philosophy." (Knowles, Holton, and Swanson 1998, 59) There is evidence that discussion of andragogy continued in Europe until Dusan Savicevic, a Yugoslavian adult educator, first discussed the concept in the United States. Malcolm Knowles heard about the term and in 1968 used it in an article in Adult Leadership. From that point on, Knowles has become known as the principle expert on andragogy although numerous adult educators including Brookfield (1986), Mezirow (1991), Lawler (1991) and Merriam (1999) have addressed the concept and/or discussed how it can be used to facilitate adult learning.

Technology and the Assumptions of Andragogy

Knowles, Holton and Swanson (1998) discuss six assumptions of andragogy. Following are expanded definitions of those assumptions with their implications for technology-based instruction:

• The Learner's Need to Know

Adults need to know why they should learn something. Under the more standard pedagogical model it is assumed that the student will simply learn what they are told. Adults, however, are used to understanding what they do in life. They want to know the reason they need to learn something or how it will benefit them. This may be accomplished before students even engage technology, such as if a Spanish class is required to fill a language elective to complete a degree, however, it is wise for the faculty member to help students understand how what they will learn will be of use to them in the future. The required Spanish language lessons will be more affective if the student feels that it will increase her/his ability to understand a bilingual colleague on the job.

One way to help students see the value of the lessons is to ask the student, either online or in an initial face-to-face meeting, to do some reflection on what they expect to learn, how they might use it in the future or how it will help them to meet their goals. Patricia Lawler (1991, 36) suggests that these goals and expectations can be used throughout the program to reinforce the importance of learning activities. The design of technology-based lessons can incorporate not only the students' original reflections but can solicit feedback about the relevance of the ongoing learning process throughout the course. It is incumbent upon the instructor to review these reflections and to adjust the technology or suggest an individual lesson structure to more effectively meet student needs.

• The Learner's Self-concept

Knowles, Holton, and Swanson emphasize that "adults resent and resist situations in which they feel others are imposing their wills on them." (1998, 65) In spite of their need for autonomy, previous schooling has made them dependent learners. It is the job of the adult educator to move adult students away from their old habits and into new patterns of learning where they become self-directed, taking responsibility for their own learning and the direction it takes. Technology is a perfect path for the facilitation of self-direction. The ultimate ability of initiatives such as web-based learning to be non-linear allows an adult to follow the path that most appropriately reflects their need to learn. It becomes extremely important for those who are designing technology-based adult learning to use all of the capabilities of the technology including branching, the ability to skip sections a student already understands, and multiple forms of presentation of material which can assist people with various learning styles. All of these can be used to permit students to follow a path of learning that most appropriately suits them.

There is, however, one final piece that needs to be added when students are learning with technology. There must be some way to help learners who are still moving into the self-directed mode. Those learners who are new to adult education or who for some reason have not experienced the ability to be self-directed learners in the past need a structure which will help them to grow. Particular attention should be given to students who may not want to spend time outside of a classroom situation; who prefer to be spoon-fed material during a regularly scheduled session. This type of student may exhibit negative opinions of having to use technology as the only means of learning as they will need to take responsibility and direct their own learning. The instructor must find ways to move these learners into self-direction by giving them short, directed, concrete online tasks that provide the most "learning for the experience" to make these adults see the relevancy of online learning.

It is also important that self-directedness not be confused with self-motivation. Although a student may be motivated to take a course, they may not be self-directed enough to feel comfortable choosing instructional modules in an online course or creating their own structured environment to learn in a web-based course.

Encouraging self-directedness may also take the form of additional instructor contact in the beginning stages of the class or could be facilitated by having students do technology-based modules within a traditional class before they move to a complete course based in technology.

• The Role of the Learner's Experience

Adults have had a lifetime of experiences. These make adult learners more heterogeneous than younger learners and also provides an additional base of knowledge that can and should be used in the classroom or technology-based learning experience. Adults want to use what they know and want to be

acknowledged for having that knowledge. The design of technology-based instruction must include opportunities for learners to use their knowledge and experience. Case studies, reflective activities, group projects that call upon the expertise of group members and lab experiments are examples of the type of learning activities which will facilitate the use of learners' already acquired expertise.

An important corollary to the experience that adults bring with them is the association of their experiences with who they are. Their self-identity including habits and biases are determined from their experience. It is for this reason that those developing technology-based instruction for adult learners need to create opportunities for what Jack Mezirow calls "reflective learning." (1991, 6) As Mezirow states, "reflective learning involves assessment or reassessment of assumptions" (1991, 6) and "reflective learning becomes transformative whenever assumptions or premises are found to be distorting, inauthentic or otherwise invalid." (1991, 6) Reflective learning activities can assist students in examining their biases and habits and move them toward a new understanding of information presented. Using web-based or other technologies to have students reflect on learning activities or to put themselves in a different character in a case study or scenario may cause adults to reevaluate already learned information or patterns.

• A Student's Readiness to Learn

Adults become ready to learn something when, as Knowles explained, "they experience a need to learn it in order to cope more satisfyingly with real-life tasks or problems." (1980, 44) It is important that lessons developed in technology-based opportunities should, where possible, be concrete and relate to students' needs and future goals. These may be adapted from the goals of the course or learning program but can also grow out to the requests for student expectations that were mentioned earlier. In addition, an instructor can encourage students' readiness by designing experiences which simulate situations where the student will encounter a need for the knowledge or skill presented. Students in a personnel management course may not see the need for learning about the Family and Medical Leave Act but an interactive role play that puts students in the place of a manager who must deal with an employee's request for leave due to a child's illness will help them see how an understanding of the topic will benefit them in the future.

• The Student's Orientation to Learning

Adults are life, task or problem-centered in their orientation to learning. They want to see how what they are learning will apply to their life, a task they need to perform, or to solving a problem. Technology-based instruction will be more effective if it uses real-life examples or situations that adult learners may encounter in their life or on the job. Allowing flexibility in the design of a lesson will permit student input on issues that need to be addressed in a class. If students can bring real-life examples of school discipline challenges to a chat session in an online course on behavior management they will be anxious to participate and gain the practical experience which will help them to do better at their job.

• Students' Motivation to Learn

While adult learners may respond to external motivators, internal priorities are more important. Incentives such as increased job satisfaction, self-esteem and quality of life are important in giving adults a reason to learn. If any of these can be related as part of technology-based instruction adults will respond more positively. Activities that build students' self-esteem, or sense of accomplishment through, for example, the completion of goals or modules that can be checked off in a sequence, may help motivate completion of a longer lesson. In addition, student's input into the development of lessons or in the prioritization of topics covered can help students to take ownership of the learning process.

Conclusion

To facilitate the use of andragogy while teaching with technology we must use technology to its fullest. Arguments for the use of technology many times include statements about its flexibility and the

ability of the learner to move through lessons any time, anywhere, and at their own pace. These arguments also include logical explanations of how a learner may adapt the lessons or material to cover what they need to learn and eliminate the material that is not appropriate or that they have already learned. To adapt to the needs of adult students, these definitions of technology-based learning must be utilized to make its design interactive, learner-centered and to facilitate self-direction in learners. Educators who are using adult education concepts in the development of their lessons must also become facilitators of learning. They must structure student input into their design and create technology-based lessons which can easily be adapted to make the presentation of topics relevant to those they teach. If these guidelines are followed, the instruction that is developed will be not only technologically workable but also effective from a learner's perspective.

References

Brookfield, Stephen D. 1986. Understanding and Facilitating Adult Learning. San Francisco: Jossey Bass.

Knowles, Malcolm S. 1980. The Modern Practice of Adult Education; From Andragogy to Pedagogy. Englewood Cliffs, NJ: Cambridge Adult Education.

Knowles, Malcolm S., Elwood F. Holton III, and Richard A. Swanson. 1998. The Adult Learner. Houston: Gulf Publishing.

Lawler, Patricia A. 1991. The Keys to Adult Learning: Theory and Practical Strategies. Philadelphia: Research for Better Schools.

Merriam, Sharan B. and Rosemary S. Caffarella. 1999. Learning in Adulthood: A Comprehensive Guide. San Francisco: Jossey Bass.

Mezirow, Jack. 1991.Transformative Dimensions of Adult Learning. San Francisco: Jossey Bass.

Catering to Students Taking an Online Course for the First Time

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Abstract

Students come into online courses with different technological competencies, learning styles, communication skills, motivations, and attitudes. There are 10 techniques instructors can implement to help students taking an online course for the first time become successful online learners. These techniques include identifying students' computer performance levels before enrollment, continually assessing students' skills and attitudes, varying instructional components, providing technical support, creating a departmental gateway Web site, and holding first class meeting. Included are recruiting graduate assistants' help, offering course content in multiple formats, relying on the flexibility of multiple communication avenues, and making phone calls and mailing handouts.

Introduction

The creation and innovations of the World Wide Web in the 1990s have revolutionized distance education. Hesser (1995) writes, "Like it or not, the computer has precipitated the entrance of an age of learning that is fundamentally independent" (p.68). Given the popularity of the Web, no other technological phenomenon has changed the delivery of distance education more than Web-based learning (Internet Introduction, 1998).

An estimated 33% of American colleges and universities offered distance education programs in 1995. By 1998, this number grew to nearly 60% with the growth of Web-based learning (Westbrook, 1999, p. 32). The idea of the Web bringing an individualized learning experience to distance education has its pros and cons. "The value of individualization is realized when a student can engage in learning at any time or in any place that may fit the individual's own unique needs, whether at home, at work, or in a center for learning" (Hesser, 1995, p. 68). An evident con is that technology sometimes prohibits students from interacting appropriately with course materials.

Four Types of Interactions

One theory, which has been developed and expanded upon in distance education literature in the past decade, is the interaction model for distance education. Moore (1989) outlines three specific types of interactions that are important in distance education. These interactions are learner-content (the learner interacts with content of course), learner-instructor interaction (the instructor and learner interact to answer questions and simulate motivation for learning course content), and learner-learner interaction

(two or more learners interact about course content). Hillman et al. (1994) agrees with Moore that these interaction models are important in distance education, but that theses three interactions "fail to take into account the interaction that occurs when a learner must use these intervening technologies to communicate with the content, negotiate meaning, and validate knowledge with the instructor and other learners" (pp. 30-31). Hillman et al. adds a fourth type of interaction to Moore's model: the learner-interface interaction.

There is conflicting research available about the extent in which technological delivery systems affect the instructional design process and the transfer of learning in regards to the course content. Hillman et al. (1994) report some researchers suggest the technological delivery system of distance education is not a factor in how well students will learn the content of a course. Clark, 1983 (as cited in Hillman et al., 1994) concluded that "media are delivery vehicles for instruction and do not directly influence learning" (p.33). Winn, 1984 (as cited in Hillman et al, 1994) agrees with Clark. " The way information is delivered has very little effect on the way it is understood. We can only facilitate understanding by good planning and sound instruction" (p. 33).

Other researchers support the viewpoint of Hillman et al. and Moore that the delivery mode has everything to do with how well students can access the content of a course. Adams and Hamm, 1988 (as cited in Hillman et al.) found that unfamiliar technology mediums affected the interactions of the users and level of knowledge acquired (p. 33). Gilcher and Johnston, 1988 (as cited in Hillman et al.) found that training was crucial for workers to become more familiar with interactive media (p.33). Fear is also cited as a reason for not succeeding with the interface. In 1990, Rheingold (as cited in Hillman et al.) stressed that "fear is an important element in every novice computer user's first attempts to use a new machine or new software: fear of destroying data, fear of hurting the machine, fear of seeming stupid in comparison to other users, or even to the machine itself" (p. 33).

Perhaps one reason some researchers, such as Clark and Winn, did not view the learner-interface as an important element in education is because they perceived that students already knew how to operate the interface equipment. 1n 1988, computers were gaining momentum in society as more people regarded Apple® computers as an upcoming essential household item. At a time when so many people were trying to learn more about computers, it is surprising that these researchers would support this position.

In 1999, Robertson and Stanforth concluded that today's undergraduate students might not know as much about computers as some people would think. Their study concluded that more than half (56%) of a random sample (N=205) of Family and Consumer Sciences majors at two Midwestern public universities rated their computer skills as "fair" or below (p. 62). Abu-Jaber and Qutami (1998) found that students who did not demonstrate abstract cognitive skills were less likely to use their self-efficacy to learn general and advanced computer skills (p.270-271). These studies support the viewpoint that even today's students need help learning how to interact with the variety of technological interfaces available.

Breaking Through the Learner-Interface Barrier

In Fall 1999, the Department of Human Resource Development at the University of Tennessee, Knoxville began offering a series of four undergraduate courses taught entirely online. A self-directed committee called the Diversified Instructional Modality Systems (DIMS) team worked for more than one year researching, developing, implementing and promoting these online courses. Both faculty and graduate assistants serving on the DIMS team quickly discovered that students who quickly developed learner-interface interaction skills had a better chance of becoming a successful distance education student because they could concentrate on coursework at a faster rate. In the spring 2000 semester, a pre-course survey administered in the first DIMS course showed that 100 percent of students in the class were taking their first course taught entirely online. The DIMS team has realized that students cannot take advantage of Moore's other three interaction models without first mastering the learner-interface interaction model. This viewpoint is supported by McIsaac and Blocher (1998) who write, "Instructional designers must include learner-interface interactions which enable the learner to have successful interactions with the mediating technology" (p. 44).

Since the Web allows students to become more independent learners and true distance education participants, it is important for students to quickly overcome technological problems. The quicker a student learns the interface, the quicker a student can concentrate on the course's content. It is logical that students taking an online course for the first time are the ones that will need the most help becoming comfortable with the interface in order to go on and concentrate on course content.

Hillman et al. (1994) offers that "the optimal solution would be a comprehensive learning program designed to ensure at least a minimum competency of learner-interface interaction" (p. 39). The researchers recommend that learners complete a technology credit course before enrolling in the distance education course. This is a good solution "on paper." Students enrolled in DIMS online courses are required to either complete a microcomputer applications course offered in the department (HRD 210), or pass a computer proficiency exam at a test-out rate of 80% before enrolling in an online course.

Hillman et al. (1994) also suggest that students can become familiar with the interface in the context of in-class exercises, orientation sessions, or technology credit courses (p. 36). While the suggestions of Hillman et al. are worthy, these methods require that students be present with the instructor. Distance education in the truest sense of the definition does not realistically allow all students the opportunity to come to campus for in-person sessions. Therefore, this paper investigates how to expand Hillman's suggestions to include methods that cater not only to students taking an online course for the first time, but also to truly distant learners.

The DIMS team has identified 10 techniques instructors can implement to help their students become successful online learners. Each technique is listed below with an explanation of how to effectively use this idea. The experiences of the DIMS team will be incorporated as examples to demonstrate how each technique helped improve students' online learning in the Department of Human Resource Development at the University of Tennessee, Knoxville. The suggestions of the DIMS team are as follow:

1. Identify students' computer performance levels before enrollment, continue to upgrade the computer prerequisites, and enforce the prerequisite policy. As mentioned above, Hillman et al. (1994) suggest that a computer course precede online courses. But it is also important to upgrade the computer skills taught in the prerequisite course and enforce that the prerequisite course be taken before online courses. All students should be able to demonstrate an appropriate level of computer knowledge and skills prior to taking a course offered entirely online. It is possible for some students, particularly adults who are returning to college, to meet the computer course requirement with an out-of-date computer class. Advisers should be instructed not to accept such computer classes, and students should be advised to update their computer skills prior to taking an online course. Institutions that already have a required computer course should make sure that training on the specific online delivery system is covered prior to enrollment.

The Department of Human Resource Development required students to take a specific microcomputer applications course offered through the department prior to registering for the first online course, but two problems persisted. First, the microcomputer applications course did not include training on the online course management system until one year after online courses began, prohibiting students from familiarizing themselves with the online course format until actually enrolling in the first online course. Second, the computer prerequisite was not strictly enforced until the Spring 2000 semester. The prerequisite was not strictly enforced because doing so would delay a significant number of juniors and seniors graduation dates. The department felt this would be unfair since the implementation of online courses was out of the students' control.

Enforcing the computer prerequisite has proven to benefit students. Prior to spring 2000, students would struggle with the learner-interface for about one month. The strict enforcement of the prerequisite policy cut the amount of time students needed to become comfortable with the learner-interface in half. In spring 2000, the prerequisite computer course will contain a lesson on the course management system. Instructors expect the time it takes students to become comfortable with the technology to again decrease in the summer 2000 semester.

2. Continue to assess students' skills and attitudes. Surveys should be conducted online at the beginning, middle, and end of the semester to assess which students need more help with computer skills. Using either the course management system or HTML forms, data should be collected to see what computer skills students are lacking coming into the course, which computer skills students are having difficulty learning while taking the course, and how much students felt learning computer skills took away from learning course content near the end of the course. This data can be used to make improvements to the prerequisite computer course and other forms of technical support available to online learners.

3. Vary instructional components. Based on the experiences of the DIMS team, it takes one-to-two years to perfect an online course. Instructors should not try to include every form of interactivity possible in a Web format all at one time. Instead, instructional components should become more varied with time and as the computer skills of online students increase. Most of the online courses supported by DIMS started as PowerPoint lessons. As of spring 2000, DIMS courses include video, audio, links, attachments, PowerPoint lessons, and more. While providing many types of interactive activities is important, instructors should ultimately consider the computer skills of the learners when selecting instructional components. All the interactivity in the world will not help a student learn if that student cannot access the course content. Simpler technology can sometimes promote better online learning.

4. Providing technical support is essential. When the Human Resource Development Department decided to offer online courses, there was a one-year transition period when both students and faculty worked to upgrade their computer skills. The department made a wise decision to hire a graduate student to provide technical support to students, faculty, and graduate assistants involved with online courses. The department set up telephone and e-mail support avenues. In addition, a graduate assistant was hired to work with each online class to provide technical support to both the students in the class and the professor. Students can call the technical support lines or their graduate assistant with questions about anything related to setting up their computer to handle the online course. The DIMS team adopted a 24 hours-a-day, 7 days-a-week policy for responding to students' questions.

5. Creating a departmental gateway Web site expands technical support provided to students. The gateway is a key resource for students taking an online course. The graduate assistant in charge of technical support developed the departmental gateway Web site and it has been accessed about 10,000 times since the fall 1999 semester. The gateway provides links to the department's online courses, software and hardware requirements, links to free software, human resource development resources, key Web sites, tutorials, support information, information on the DIMS team, and much more. The Web site is available at **http://hrd.he.utk.edu/Dims-gate/main.htm**.

6. Holding first class meetings on campus enables students to meet with instructors and other students at least one time in person. Holding in-person meetings are important to help students register in the course management system, buy textbooks, and hear details about the class. The DIMS team has found these orientation meetings particularly helpful to students during the transition period because the majority of students taking an online course for the first time did not have credit for taking the prerequisite computer course. Students can participate in a hands-on workshop to be oriented with the course management system. Instructors who plan on implementing online discussion groups should also consider dividing students into groups during the first class meeting. This will allow the students to meet in person before communicating solely online. Students taking DIMS courses have reported that this is extremely beneficial no matter how many online courses they have taken. The downfall of required first class meetings is that truly distant learners are left out.

7. Recruit graduate assistants' help. Faculty on the DIMS team report spending up to ten times more time teaching an online course than a traditional classroom course. Graduate students can help save faculty members literally hundreds of hours by helping with instructional development, students' daily correspondences, technical support, and Web site maintenance. Generally a graduate student will be enrolled four semesters. Faculty members can develop an action plan to increase the graduate students' involvement with the course over these four semesters. For example, DIMS instructors generally coach a graduate assistant on how the course content should be delivered for one semester. After that, the faculty member can allow the graduate student to also answer e-mail related to course content. Often times,

graduate students can help instructors increase their technology skills and provided suggestions on how course content can be delivered with more ease to the student. Graduate students on the DIMS team also take graduate-level online courses, so their experiences can be incorporated to improve online learning.

8. Offer course content in multiple formats. All computers are different. Instructors should not assume that what works on their computer will work on students computers. By uploading instructional components in multiple formats, more students will be able to quickly access course content. Students taking an online course for the first time discover during their first online course experience that their home computer might need more plug-ins and other software to complete the course. For this reason, the DIMS team decided to offer PowerPoint lessons through direct links to the PowerPoint lessons and through an HTML version. Offering both formats enabled students who needed time to download the PowerPoint Viewer in order to access the direct PowerPoint links to go on and access the course materials through their Web browsers using the HTML version.

9. Rely on the flexibility of multiple communication avenues. The flexibility and globalization of the Web enabled online learning to be possible, but it is the array of communication avenues that has enabled all four interaction models to flourish in this delivery format. Instructors should use e-mail for private learner-instructor interactions and feedback on assignments. Also learner-learner interaction is also possible through e-mail, so be sure to provide students with a list of classmates e-mail addresses. Discussion boards and chat sessions are also an excellent learning tool for reinforcing the four interaction models. Discussion boards and chat sessions will run smoothly if students are divided into smaller groups and given directions on how to log into these features and are provided a set of instructions on effective ways to participate in an online discussion. For many students, this could be their first time communicating in an online environment. Providing instructions will ease some students' fears about the purpose of participating in an online discussion board or chat session. If you plan on using the discussion board, students will direct their conversations more toward course content if a specific topic is assigned for discussion. Ideas of discussion board assignments include assigning a Web site students can research and report a new finding from or discuss a case study from the textbook. Chat sessions work best when students have a set time they must report online. Instructors should be involved in the coordination and facilitation of live chat sessions. To manage the online conversation, groups could be assigned to log on at specific times. Students often report that chat sessions limit their freedom in an online course because they must report online at a certain time.

10. Make phone calls and mail preliminary handouts. For truly distant learners, a mailing with directions on how to enter the course site is a must. Providing a hard copy gives a personal touch from the instructor at the very beginning of the semester and helps students with inadequate computer skills get started in the class. This mailing will also help remove the void of missing the first class meeting. Even though the Web should be the primary mode of communication, instructors should not be afraid to call students when e-mail and other written forms of communication are not working. Often times a five-minute phone call can help a student more than five e-mail messages. For truly distant learners that do not have the computer capability to support video conferencing or the computer skills to effectively participate in more advanced communications, a simple telephone call can serve as an office visit. Students will appreciate the personal correspondence.

Summary

The learner-interface model is important to research because of the growth in Web-based distance education programs. When an institution decides to offer online courses, faculty need to prepare for at least a one-year transition period. It has been the experience of the DIMS team that it really takes two years to develop, implement, and promote a series of online courses. When implementing online courses, administrators must make policies that allow students to gain the computer skills necessary to adopt to the learner-interface interactions that exist in online-learning environments. Administrators should coordinate the curriculum of a prerequisite computer course, allow a transition period for students and faculty members to enhanced their computer skills, and implement other techniques to help students and faculty members make a smooth transition to online environments.

While the main thrust of teaching is for students to learn content, administrators must understand that

technical support and improving students' computer skills will always be a factor in online courses. Supporting literature points out that self-efficacy of computer skills will start to wear off after 2 ½ year period (Decker, 1997). There also is evidence to support the notion that preferred learning styles could help determine if employees or students will feel comfortable in computer-based learning. It is important to realize that some students will do better to be taught in person (Dowdall, 1992).

As Web technologies improve, students' skills will need updating. The future of the Web should make online learning more transparent, but not unless institutions prepare students to interact with the learner-interface aspect of online learning. This preparation requires administration, faculty and students to rely on techniques that go beyond traditional teaching and learning efforts.

References

Abu-Jaber, M. & Qutami, N. (1998). Students' self-efficacy of computer through the use the cognitive thinking style. International Journal of Instructional Media, 25(3), 263-276.

Decker, C. A. (1997). Training transfer: Perceptions of computer use self-efficacy among university employees. Retrieved September 27, 1999 from the World Wide Web: http://scholar.lib.vt.edu/ejournals/JVTE/v14n2/JVTE-3.html.

Dowdall, R. J. (1992). Learning style and the distant learner. Sacramento City College, CA: Learning Resources Division. (ERIC Document Reproduction Service No. ED 348 117).

Hesser, L. A. (1995). Distance education for doctoral students: An overview of the national cluster format for students in the doctoral program for child and youth studies. Paper presented at the National Educational Computing Conference in Baltimore, MD. (ERIC Document Reproduction Service No. ED 392 420).

Hillman, D., Willis, D. J., & Gunawardena, C. N. (1994). Learner-interface interaction in distance education: An extension of contemporary models and strategies for practitioners. American Journal of Distance Education, 8(2), 30-42.

Internet Introduction. (1998). Washington, DC: InfoSource, Inc.

McIsaac, M. S., & Blocher, J. M. (1998). How research in distance education can affect practice. Educational Media International, 35(1), 43-47.

Moore, M.G. (1989). Three types of interaction. American Journal of Distance Education, 3(2), 1-6.

Robertson, L. & Stanforth, N. (1999). College students' computer attitudes and interest in Web-based distance education. Journal of Family and Consumer Sciences, 91(3), 60-64.

Westbrook, T. (1999). Changes in student attitudes toward graduate instruction via Web-based delivery. Journal of Continuing Higher Education. 47(2), 32-28.

Preparing Mississippi's Future Teachers to Use Technology

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Abstract

The University of Southern Mississippi, the largest producer of teachers in the State of Mississippi, is implementing an innovative strategy for infusing technology in and improving the teacher preparation program at USM. Plans are being developed to assure that professional Education faculty can model the use of technology to support teaching and learning. This session will summarize technology standards for Teacher Education and identify performance outcomes that correlate with those standards. It will also outline processes and plans for acting on and, perhaps, even for setting technology standards for Teacher Education. A progress report will be provided.

Preparing Mississippi's Future Teachers To Use Technology

The University of Southern Mississippi (USM) is a multi-campus, comprehensive university that is the single largest producer of teachers in the state. The University is committed to preparing professional educators and identifies professional education programs as one of the defining missions that shapes the University's vision of its future. The Professional Education Council (PEC), chaired by the Dean of the College of Education and Psychology, governs the University's Professional Education Unit. PEC membership includes representatives from the five colleges offering programs in professional education, educators from the public schools, and representatives from the student body.
In the fall of 1998, the PEC led USM's Professional Education Unit through a successful NCATE accreditation visit. The self-study preceding that visit laid the groundwork for substantial curricular reform efforts that are now underway. In a related reform initiative, the PEC directed an ad hoc committee on technology to determine competencies for Teacher Education in technology, to suggest

options that departments might adopt for assuring that competencies for Teacher Education in technology are achieved, and to determine the manner in which departments are to report this information.

Then, the ad hoc technology committee was directed by the Chair of the PEC to follow up on its initial report (prepared and submitted at the August 1998 PEC meeting) by continuing to review technology standards for Teacher Education and to consider how these standards applied to the committee's first set of recommendations. The ad hoc committee was instructed to work in a way that might promote faculty awareness of technology standards for Teacher Education and for professional teachers by summarizing current technology standards for Teacher Education and by identifying performance outcomes related to teaching and learning that correlated with those standards. After further review of technology standards for Teacher Education and discussion about performance outcomes that might relate to "the standards," the committee arrived at consensus on a number of things and reported again to the Professional Education Council in February 1999.

Soon after, a plan of action was developed in the form of a proposal for a $175,000 federal grant to pursue the objective of improving pre-service teachers' use of technology in the classroom. In September 1999, USM received a Capacity-Building grant through the Preparing Tomorrow's Teachers to Use Technology (PT3) program. With support from the PT3 initiative, the University has been able to lay a foundation that will support further implementation of the ad hoc technology committee's recommendations.

Supporting Technology Standards for Teacher Education

Between April of 1998 and March of 1999, the ad hoc Committee on Technology for Teacher Education at USM went about its work as instructed. There were six members of this committee with faculty representation from Teacher Education programs in Elementary Education, Secondary Education, Special Education and Technology Education. The committee's first report was shared with the PEC at its scheduled monthly meeting in August of 1998.

With regard to its first charge, that of determining competencies for Teacher Education in technology, the committee agreed that technology competencies for Teacher Education should build on competencies that the Mississippi State Department of Education seeks to foster n students at the K-12 level and should be consistent with Instructional Technology Standards for Professional Development that the Mississippi State Department of Education had articulated. These standards were based on NCATE and ISTE guidelines and standards. The committee also agreed that the building of technological competence is a matter that is increasingly likely to precede matriculation at the university, but which also is a core value in the recommendations on Teaching and Learning from the Report of the Commission on the Future of the University (USM, April 14, 1998) which would "require a freshman experience course to aid students to develop critical thinking, research and study skills, introduce them to the University library and the use of electronic information systems, and teach other vital skills that will contribute to the students' success in college and in life." The report also emphasizes that the university "provide the latest instructional technology and training in effective use of such technology."

Given this university wide commitment to supporting student learning with technology and given the increasing technological competence that might be expected of students applying for admission into the Teacher Education programs at the university, the ad hoc committee recommended that technology skills and competencies should be evidenced through demonstration by all Teacher Education students no later than the end of the first semester of the junior year of undergraduate certification programs.

The PEC's second charge to the ad hoc technology committee was for it to suggest options that departments may adopt for assuring that competencies for Teacher Education in technology are achieved. The committee recommended that progress might be made toward achieving this goal if all Teacher Education syllabi reflected the use of technology to support teaching and learning. Where syllabi might not show such evidence, the committee was willing to concede that there might be good reasons for this to be the case, but that such omissions should be justified with strong pedagogical rationales. The ad hoc committee also suggested that similar commitment should also be demonstrated in all syllabi (not just those for Professional Teacher Education programs) in support of the core curricular value set on integrating the use of technology across the university.

The committee recommended that each Teacher Education unit of program develop human performance support systems which might include hired technology savvy personnel to assist Teacher Education faculty in modeling technology skills and behaviors. It also recommended that teaching and learning

areas be supported with adequate and appropriate technologies (hardware and software) so that Teacher Education student and faculty technology skills and behaviors could be learned as well as exhibited. Moreover, the ad hoc committee strongly recommended that Teacher Education faculty be recognized for their use of technology to support teaching and learning in annual evaluations and that the evaluation system for professional performance might be revised so that such efforts and initiative "count" in teaching evaluations.

For Teacher Education students, the committee recommended that fundamental technology skills and competencies be documented and registered by the end of the first semester of the junior year. It was suggested that this might be accomplished in a number of ways. Students who opt to take or who are required to satisfactorily complete a course, such as Technological Literacy for Educators, might demonstrate minimal levels of competence when this accomplishment is registered on the student's transcript. The committee also suggested development of a form or checklist that might include technology competencies and skills that might be expected of all Teacher Education students by the end of the first semester of the junior year and that these competencies might be "CLEPed" (Credit for Life Experience Proficiencies) before that time through a variety of methods that the Departments might devise with the approval of the PEC. These methods could range from an "all or nothing, high stakes" CLEP Comprehensive Technology Examination to an incremental model in which competencies and skills are "banked" and "registered" over time. The Committee encouraged all Teacher Education programs and supporting academic units to consider building on these minimal standards and guidelines for Teacher Education student proficiency in ways that are appropriate for the particular teaching specialty areas.

While the committee suggested a range of options with Departments and programs might adopt to address important issues relating to the use of technology to support teaching and learning by Teacher Education students, the committee suggested that departmental reporting mechanisms might best be developed by the departments and programs with the approval of the PEC and related oversight agencies. In the absence of departmental or program initiative, the committee left open questions relating to top down dictation of standards and reporting practices expected from the grass roots levels of the Teacher Education programs. However, it was hoped that with university support to address technology standards across the curriculum, Teacher Education programs would respond in responsible and appropriate ways. In this way, the third initial charge that the committee was instructed to consider (that of determining the manner in which departments might report on an be accountable for being attentive and responsive to technology standards for Teacher Education) was addressed.

Following submission of its initial report to the PEC, the ad hoc technology committee was directed by the Chair of the PEC to continue to study technology standards for Teacher Education an to consider how these standards might apply to recommendations made in the August 1998 report. They were asked also to work in ways that might promote faculty awareness of technology standards for teacher education and for professional teachers. After deliberating thoroughly, the committee again reported to the PEC in February 1999.

The committed agreed that technology-related curriculum for pre-service teacher preparation and for in service training of Teacher Education faculty should be flexible and meet the needs of individual instructors. A wide range of skills and applications might be used to embrace student and teacher performance. Also, it agreed that while technology standards for Teacher Education can be clearly articulated there is likely to be no single set of proficiencies appropriate for all k-16 educators. Technical assistance in Teacher Education should support instructors (pre-service and university based) with relatively advanced skills and knowledge to explore a wide variety of applications that they believe to be appropriate, but it should also allow teachers with little prior knowledge to master basic skills that will build confidence so that skill building will con tinue through professional development.

The committee suggested that pre-service teacher preparation and professional development be process oriented. It may be difficult for teacher preparation and professional development programs to have the time or the resources to cover the wide range of technological applications that are available and emerging for both teacher and student performance. However, by developing process oriented skills and knowledge (for example, the ability to analyze, select, apply and evaluate appropriate technologies), pre-service teachers and Teacher Educators can become more responsible for improving their technological proficiency and in developing their own plans for acquiring professional levels of technological literacy suited to their roles and goals in education.

Also, as members of the Professional Education faculty, the committee agreed that when we talk about integrating technology use in the classroom we should strive to keep the technology as transparent as

possible. That is, unless the subject matter focus is specifically on technology, subject matter should be the focus and not the computers, video discs, or other media. The committee believed strongly that faculty should model this integrative behavior in our work with pre-service teachers if we are to expect them to use technology in this way in their classrooms.

Given the proliferation of technological proficiencies, the committee concurred with NCATE, ISTE and other national standards in suggesting that three levels of proficiency be considered for technology related training for educators. These are a) basic computer/technology operations and concepts; b) personal and professional use of technology; and c) application of technology in instruction. The committee agreed that pre-service teachers and Teacher Educators must be provided with time and training to develop proficiency at all three levels. Performance outcomes related to these standards for all Teacher Education programs at the university were too numerous for the committee to elaborate in detail. However, for Professional Educational Faculty, technology standards might be benchmarked into performance outcomes according to each of the three proficiency levels.

In its February 1999 report to the PEC, the committee recommended that the use of technology should be infused throughout the university's pre-service teacher preparation programs. It was noted that some teacher preparation programs at USM have tried to do this and that some programs have eliminated technology-specific course requirements. while the committee's preference was that technology be integrated and infused across the curriculum, it observed that until most university faculty can demonstrate that they can effectively model the use of computer technology in the classroom it may be necessary to require technology based courses to address certification performance outcomes.

Since resources for using technology to support teaching and learning are expensive and not always available to address the demand for their use and the mandate that they be used which the technology standards for Teacher Education outline, it was suggested that the unit explore the formation of partnership with k-12 public schools, businesses, industry, and state agencies to jointly pursue approaches supporting technology development. Partnerships might provide cost savings for preparing pre-service and in service teachers. Sharing equipment, labs, instructors and expertise might offer not only financial advantages, but also the possibility of developing new models and approaches to meet the demand for technology-rich classrooms. Such collaboratives might also help to address technology training needs of pre-service teachers as well as professional development needs of k-12 educators and of Professional Education Faculty. The committee concluded by emphasizing its belief that without adequate on-going support in the form ofhardware, software and technical assistance to support Teacher Education for students and the work of professional education faculty on their behalf, the integration/infusion model that it preferred for employing technology to support teaching and learning will not likely be successful.

Building Capacity for Innovative Transformations of Teacher Education Through Technology

Between March and June of 1999, an interdisciplinary team of faculty from across the university developed a plan to try to assure that Professional Education Faculty might have skills needed to model the use of technology in a transparent manner when they teach, to design standards and curriculum to efficiently use technology to enhance learning, to improve access of education faculty and students to technologies needed to enhance teaching skills and to model the effective use of technology as teaching tools, and to develop and improve collaboration among academic departments, area school systems, community colleges and others that provide technology training to effectively integrate the use of technology as learning tools. That plan was embedded in a proposal for a $175,000 federal grant to pursue the objective of improving pre-service teachers' use of technology in the classroom.

These efforts were rewarded in the form of a capacity-building grant to lay the groundwork for program development. With support from the Preparing New Teachers to Teach with Technology initiative, Professional Education Faculty have had time to learn and to consider not only the possibility, but also the benefits of changing the ways that they teach. One unusual aspect of the USM program is that education faculty who receive special technology training have been partnered with public school teachers and these Professional Education Faculty members then go out to work with school children in the field to investigate what technology tools are effective. Partnering with seven school districts, six two-year colleges, two education consortia, and the Mississippi Department of Education, the university has been undertaking on-going efforts that are laying the groundwork for extensive technology infusion that complements overall curriculum reform efforts already underway. Also, community college and school partners have participated actively in helping to determine what entry-level standards should or

might be expected of Teacher Education candidates at the university.
Subsequent to the reports of the ad hoc technology committee, four broad goals for insuring the infusion of instructional technology into all professional education programs have been endorsed by the PEC, the governing body of professional education programs at USM. These goals are that: 1) Professional Education Faculty will have the skills needed to model the use of teaching with technology in a transparent manner; 2) The standards and curriculum of the professional education program will be designed to efficiently use technology to enhance learning; 3) Professional Education Faculty and students will have access to appropriate technology to enhance teaching skills and to model the effective use of technology as a teaching tool; and 4) Collaborations will be developed and strengthened among university departments, with k12 Local Education Agencies (LEAs), area community colleges, and with existing consortia that provide technology training and support to area schools to effectively integrate the use of technology as learning tools throughout the education system.
Along with these goals, four objectives with related activities have been identified to build capacity for supporting teaching and learning with technology to allow USM to pursue an innovative teacher preparation program improvement strategy. The first objective is to develop a system of insuring basic technology literacy for in-coming professional education students. USM is working to identify basic technology literacy competencies to address this objective by conducting an extensive literature review, by incorporating previously established basic technology competencies (i.e., NETS Standards, ISTE Category I Standards, Mississippi Department of Education Computer Competencies), and by forming and collaborating with an Educational Technology Standards Committee with membership consisting of representatives from the community college and LEA members of the consortium, as wells as representation from the Mississippi Department of Education.
Specific courses from the University and local community colleges are being identified that, upon successful completion (a grade of C or better)), would satisfy basic technology literacy requirements. In addition, a means of determining technology literacy through a "challenge" test might soon be documented in the professional education student's file and be required for admission to candidacy in Teacher Education. Already, the Educational Technology Standards Committee has reached consensus on a list of basic competencies that are consistent with ISTE's Basic Educational Technology Literacy standards, has agreed on the development of a performance-based test for incoming students, and is currently working towards articulation agreements between USM and its feeder two-year colleges that will identify existing courses that can serve as transcript evidence of meeting the entry level standards.
Capacity Building Objective Two is to develop and pilot professional development activities for Professional Education faculty. With support from the PT3 Capacity Building initiative, USM has conducted professional development activities for University faculty, focusing first on faculty who teach professional education core courses as well as on those who teach in three program areas: Elementary Education, Secondary English Education and Secondary Science and Mathematics Education. An assessment of training needs for these faculty who are PT3 project participants (7 in the fall semester of 1999, 8 in the spring semester of year 2000, and 8 in the summer semester of year 2000) indicated an interest in training related to three broad areas: web page development, distance learning technologies, and authoring tools, such as Hyperstudio and PowerPoint.
These participating faculty commit to pursue individual professional development plans. Project faculty work with them to provide direct support through training sessions organized for PT3 cohort participants and also direct them to existing training opportunities at USM. Faculty involvement in the project has included visits to schools in partner districts for observation of existing technology infusion activities and to join in on-site training sessions that are provided by cooperating school technology coordinators. Additionally, PT3 project faculty have been partnering with public school teachers for at least one semester. These two-member teams (a USM faculty member and a public school teacher) identify project goals and work together in the teachers' classrooms and schools t develop and engage in technology-supported learning activities. Reports form university faculty and from school partners indicate that these collaborative experiences have been the most beneficial aspect of the project activities for them and that this partnering has been highly effective for the teams' professional development as they learn ways to infuse technology in their teaching.
As Professional Education Faculty have collaborated with classroom teachers from partner school districts to develop and test course materials and lessons infused with the available technology, their presence in classroom and school settings has also provided support for the regular teachers to implement plans for employing some of the technologies in which they had already received school district and state training. This training has afforded occasional release time for teachers to explore an

integrate technology to address curriculum objectives without undermining the quality of instruction for k-12 students. USM faculty have also benefited by participating in field experiences in which they gain opportunities to test their new knowledge and experiences that they can draw on as they shape their course revisions.

Capacity Building Objective Three involves developing and piloting a systematic model of curricular reform for technology infusion in Teacher Education programs at USM. Using NCATE 2000 standards and standards from the relevant learned societies (ACEI, IRA, NCTE and NSTA), the current curriculum for each pilot program and for the targeted core courses are being reviewed for evidence (frequency and appropriateness) of technology infusion. Program curriculum committees are charged with determining the competencies and applications necessary for successful teaching and learning in their disciplines. A logical sequence of multiple learning experiences with technology will be designed and keyed to appropriate courses (for technology modeling behaviors by instructors and for student assignments that require the use of digital resources) to insure consistency within an individual program and across all professional education programs.

Also, documentation requirements and guidelines are being developed for all Teacher Education programs. All of the Teacher Education programs will be expected to document and to demonstrate effectiveness in technology infusion to support teaching and learning during regularly scheduled program reviews by the PEC's program review committee. A model of curricular reform relating to technology objectives will be available for programs to guide them in the extension of reform to all professional education courses and programs during the implementation phase of this work.

Capacity Building Objective Four involves proposing necessary enhancements to the current technology infrastructure at USM. A number of activities are now well underway to address this challenge. An assessment of dedicated Teacher Education facilities is being conducted. Through an extensive review of the literature, surveys of available current and emerging technologies at other institutions, and input from the Professional Education Faculty, USM is attempting to identify and establish facility requirements to promote technology infusion. After recommended facility requirements are determined, work will move forward to document limitations of our current infrastructure and to propose needed enhancements of facilities to assure the existence of Teacher Education student learning environments commensurate not only with PEF proposed facility requirements, but also consistent with exemplary school district and community college educational and instructional technology environments that are essential parts of the k-16 pre-service teacher preparation programs to which USM is strongly committed.

Program Evaluation:

An Evaluation plan for the PT3 Capacity Building Grant was designed to monitor progress toward meeting project goals and objectives and to establish benchmark data for use in ongoing "implementation" work. The purpose of current program evaluation work is primarily formative, relying on a variety of quantitative data gathered from surveys and observations. Evaluation activities have been conducted throughout the Capacity Building year and a portfolio containing the collected data and ongoing analysis of the effectiveness of the project activities is being developed. The portfolio includes baseline data collected at the beginning of each major activity, observable data demonstrating that the project is underway, evidence of participants' judgments about the project, and a variety of outcome indicators. Earlier in this report, summaries illustrating the extent and impact of program activities to date have been shared.

The entire range of professional development activities is being assessed and appraised with formative evaluation strategies in order to refine them for use with the remaining Professional Education Faculty during the implementation work that will follow this Capacity Building year. A Technology Demonstration Conference was held at the end of the Fall Semester (and will be held at the end of each semester of training) during which PEF and their partner teachers shared products and lessons that they developed during their time together. Also, technology seminars will be conducted for all PEF at the beginning of the next school year in which PEF who participated in the PT3 project will share conference-quality papers on best practices and lessons learned about teaching, learning and technology.

During this capacity building year, syllabi for professional education courses have been reviewed to gather baseline data on technology infusion. The review of 154 syllabi has indicated that word processing (44.2%) was the application most frequently required of students, followed by the use of Web browsers (29.9%), e-mail (17.5%), and databases (16.9%). Fifty-eight of the syllabi (37.7%) provided no evidence of required use of any technology tools by students.

Evaluation of the syllabi for evidence of technology use being modeled by instructors yielded similar

data: word processing is evident in all but one of the syllabi (99.4%), e-mail us in 46.1%, Web browser use in 28.6%, and database use in 20.1%. An earlier needs assessment also indicated that word processing, e-mail, and Web browsers were the technologies most frequently used by faculty, with scanners, digitizers, CD-ROM production, Web page development software, presentation software, and Web-based courseware as the technologies used least by faculty.

Another aspect of capacity-building efforts that can support future implementation efforts is the initial development of two databases. With the help of partner school district contacts and of educational consortia directors, mentor teachers in the schools have been identified who are already using technology to support their students' learning in exemplary ways. Information has also been gathered about technology access available in the classrooms in which USM student teachers are consistently placed. Reports on 53 of the classrooms housing student teachers during the first placement for spring semester indicate that 51 (96%) have at least one computer. The majority (32/60%) have 2-4. Thirty-four classrooms (64%) are connected to the internet and 23 responses indicated that all computers in school classrooms have internet access. Gathering of this data will continue throughout the Spring semester 2000 in an effort to develop a clearer understanding about the technological realities of classrooms to which our student teachers and graduates go.

Conclusion

The program review and reform process, as well as the PT3 Capacity Building initiative at USM, has been built on a strong partnership base with support from and active involvement of a broad group of stakeholders in the preparation of future teachers in Mississippi. Activities that a PT3 Capacity Building grant has made possible are strengthening these relationships and accelerating support for significant processes of reform for this professional education program that produces 32% of the state of Mississippi' teachers.

Ultimately, the goal of this initiative is not simply to promote the transparent infusion of technology into the pre-service teachers' education or even into their instruction in their future classrooms. It is to insure that these future teachers are confident that they will be able to devise ways to use all the tools available to them at the university and in the field, including the powerful learning tools of technology, to improve student learning, to help their students to reach high standards, and to provide *all* of Mississippi's students with equitable access to the knowledge and skills they will need for responsible citizenship and productive employment in the 21st century.

REFERENCES

Hirumi, Atsuit and Isidro Grau IV A Review of Computer-Related State Standards, Textbooks, and Journal Articles: Implications for Preservice Teacher Education and Professional Development, Journal of Computing in Teacher Education, Volume 12 Number 4, 1996

Northrup, Pamela Taylor and Little, Wesley Establishing Instructional Technology Benchmarks for Teacher Preparation Programs, Journal of Teacher Education, Volume 47 Number 3, May-June 1996.

National Standards for Technology in Teacher Preparation, ISTE Accreditation and Standards Committee, http://www.iste.org/specproj/standards/intro.htm

Technology and the New Professional Teacher: 21st Century Classrooms, National Council for Accreditation of Teacher Education, http:/www.ncate.org

Technology Standards for Teachers, Southeast Regional Education Board: Atlanta, GA, http://www.sreb.org

Creating a Low Cost but Dynamic Telecourse

Mid-South Instructional Technology Conference
Middle Tennessee State University
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BACKGROUND: Before Developing the Telecourse

A review of the literature on the utilization of technology and distance education and/or a review of the proceedings of the growing number of conferences either dedicated to or focusing on technology and distance education can quickly lead you to the conclusion that technology and distance education add up to the wave of the future. The wave is already moving and building substantial strength. However, what tends to be lacking is an appreciation of: the costs related to the wave, the damages the wave is likely to cause, and the almost total failure to place the wave within a value system consistent with the optimistic rhetoric that usually accompanies pronouncements about the wave of technology and distance education.

Although some efforts are being made to alert us to the costs and potential damages (Kreuger & Stretch, 2000; Gibelman et al, 1999; Orivel, 1996), while others have helped establish its effectiveness and ability to do things we cannot accomplish in traditional classroom settings (Freddolino & Sutherland, 2000; Coe & Elliott, 1999; Fitzgerald & McNutt, 1999), I have yet to find any coherent value system developing. Therefore, let us begin with a brief value system:

The world's resources are not infinite and they are not distributed equally on a global basis. Continued resource consuming growth and maldistribution of ever more scarce resources will increase conflict and poverty as well as undermine an ever more fragile ecosystem. Therefore, technology and distance education should be prioritized in ways that reduce waste and enhance equitable resource distribution.

Although additional values are inherent in the above statement and others could be brought into the discussion, due to limits of time and space (resources), I am going to limit myself to the above statement. Although you can't find this value position presented in the distance education literature, at least some awareness does exist as to the importance of such a global perspective (Johnson, 1999; Tiffen & Rajasingham, 1995).

What are the implications of this value statement? Should all universities, worldwide, start behaving as follows?

a. Stop building new ego-edifices? Actually start tearing down, selling off existing buildings? At Middle Tennessee State University (MTSU) "we" take great pride in the new library (a lovely building with increasingly little use) and an equally new and magnificent football stadium (to help ensure a win-lose mentality among students which is at odds with both biology and economics where win-win models are essential for survival (see Robert Wright's *Non-Zero: The Logic of Human Destiny* for how win-win works). When the State of Tennessee threatens MTSU with funding cutbacks, we threaten back with plans to serve fewer students and raise tuition fees. Might we not see this challenge as an opportunity to do more with less via technology? The State of Washington is now thinking in these terms (Carnevale, 2000).

b. Start making our courses available without cost to developing nations? This does not assume that we have something they need to learn as much as it assumes they want to learn what we are learning/teaching so that they can take from it what will help them obtain a more equitable share of the world's resources. Some professors are already doing this on an informal basis. Might we not want to encourage this type of sharing? (Frost, 1998).

c. Increase the availability of free college courses to high school students for a variety of reasons? For example, students at the high school level who currently have such access discover their academic strengths and weaknesses early on---and may, therefore, decide to go or not to go to college and prepare accordingly. One of the greatest wastes in higher education is where students drop out during their Freshman year, often due to their not being ready to handle the demands of a college education. This not only drives costs up but it also undermines the incentive and self-esteem of students. Also, such courses could easily act as a far more effective way of determining a student's abilities than the current Scholastic Aptitude Test. What counts, ultimately, is not aptitude but ability to perform, which can be powerfully linked to attitude, commitment, and perseverance.

With a little effort on the reader's part, you may well come up with a variety of other questions the value system raises. My point is simply this, although a growing number of universities are investing in technology and distance education, little thought is going into the value system that should be guiding that effort.

Now let us assume that we have developed the value system, that we are downsizing our educational system and making our distance education courses available to everyone, world wide, all ages, either free or at significantly reduced costs. It is also assumed that we are doing this in a manner that makes it relatively easy for working people to take the courses and that enough courses are available that you can complete a degree in any field through distance education. Clearly we are not there yet, however, the potential to quickly reach this point exists and some organizations are already moving in this direction. The University of Utah is now advertising its distance education Ph.D. program (www.socwk.utah.edu), private Nova Southeastern University with 17,000 students brags that its total enrollment has doubled in the last 10 years and Nova is recognized as a pioneer and innovator in distance education (www.nova.edu), Walden University pushes its online graduate distance education courses (www.waldenu.edu), while such "bastions of the liberal arts" as Amherst, Brown, and Willams are considering a deal with a private company to offer their courses online (Carr, 2000, Jan. 28)---and these are only a few of the ever increasing examples of the wave beginning to crash down upon higher education.

What is now missing from this picture? How do we ensure that what we will be teaching is of a higher quality than what we are now teaching? This question assumes that what we are now doing needs to be done better. A lot of educators fear that distance education will undermine the quality of education. That fear is a reasonable one and steps need to be taken to ensure that a dumbing down of education does not occur. To ensure that this does not happen, as Quam (1999, p. 325) suggests, after she cautions us to find an effective blend of technology and traditional teaching: "We need not fear the future if we are a part of shaping it." But, let's get honest here! In general, the quality of education is dismally low! A significant number of the students we are currently "growing" are marginally literate, often have a shallow understanding of the world beyond their backyard, and are, in many ways, ill equipped to effectively understand, support, and participate in the type of world the above value system outlines. Therefore, we should be more concerned about how to use technology to enhance quality, rather than simply using it because it is growing in popularity. This is especially true given that the questions of cost efficiency and effectiveness of technologically driven teaching are still very debatable (Jaworski, 1996; Orivel, 1996). However, even given this debate, the best way of ensuring quality is through

embracing technology and distance education and placing quality issues as the number one priority. Obviously, this requires that we rigorously evaluate the teaching that we do whether it is technologically sophisticated or relies upon traditional forms of pedagogy that go back some 4,000 years. This concern with evaluation is, fortunately, a growing one (Knott, 1994; Connick, 1997; Smith, 1996). Also, a substantial body of literature is now available to provide guidance in our efforts to effectively employ technology and to assist us in developing models that address a significant number of the concerns raised (Plomp & Ely, 1996; Wagner, 1997; Potts & Hagen, 2000; Forster & Washington, 2000).

DEVELOPING THE TELECOURSE

All of the foregoing was playing through my mind as I prepared to create the first telecourse produced by MTSU. Also, my belief system, as I sat down to plan the telecourse, was one in which:

- although I teach and have taught via interactive satellite transmitted technology, I do not believe it to be the wave of the future.

- although I have a website for my telecourse, I do not believe that Internet courses are the wave of the future.

What I felt was the wave of the future had to meet certain basic expectations:

a. The course needed to be, at least in a significant part, visual. Certain people learn best through visually supported messages (Cyrs, 1997, pp. 27-32).

b. The course needed to have a story-based emphasis in what I was trying to communicate. Most people retain concepts for a longer period of time if they are linked to stories.

c. Whatever was being taught, the student needed to appreciate that an individual could and should hold in their mind more than one way of viewing reality at the same time. Dichotomous thinking where ideas were presented as yes/no, right/wrong, tends to distort the diversity that naturally occurs.

d. The material presented needed to be seen as relevant to the student's own personal life and seen as useful for their personal growth.

e. The course must, to a significant degree, be experiential and interactive. The material needed to be presented in a manner that actively involved the student, even the distant student.

Creative teachers have long believed in and practiced the above as essential elements in their pedagogical approach. As Wagner (1997) notes, the key to successful teaching at a distance is still the active participation of the learners. This interactivity needs to be on three levels: teacher/student, student/student, and student/content. Obviously, this was a substantial and very demanding set of expectations for a telecourse as it is for any course. The task for the telecourse production is more complicated because the teacher that is skilled in the traditional classroom setting cannot expect to successfully transfer those skills over to the distance education environment (Cyrs, 1997, pp. 15-18; Jaworski, 1996; Simonson, 1997). Also, telecourses can expect a higher dropout rate than comparable traditional courses if they do not create a structure to minimize attrition (Carr, 2000, Feb 11). Keeping in mind that the level of support for this course by the university was marginal, the challenge was,

therefore, even more demanding. All the university was prepared to provide was a studio in which the course could be taped. The university offered no release time to prepare the course, no resources for shooting scenes outside the studio, no funds to enable me to pay guests to come to MTSU and participate in the course, no time for sophisticated editing of the course so as to enhance the quality of the product. (On one level, this lack of resources fits very nicely into the value system noted earlier. It should not take large sums of money to create effective distance education courses.)

It was up to me to innovate, to scrounge up resources to supplement the course, to figure out ways to meet my expectations. Fortunately, a talented drama professor at MTSU, Dr. Jette Halladay, was willing to participate in the telecourse by directing a group of students who would do a role-play for each of the 13 segments. Also, the role play actors would do a scene, and play the same scene over again up to four times, all live on-camera, so that the audience could observe how people might approach a problem from more than one perspective. I was also fortunate in enlisting the participation of Belleruth Naparstek, a nationally recognized expert on visual imagery exercises. Thanks to her willingness to release her copyrighted material, I was able to end every telecast with a different one of her vivid imagery exercises, which lent a powerful participatory element to all of the lessons. The third element for the videotaped portion of the course was myself. I had to make sure that I role modeled the behavior that I was expecting from my students. Therefore, a significant part of what I had to present was based on self-disclosure, my own life experiences related to the content of the course. If I really believed that what I was teaching was relevant to the student's life, then I surely must have been using the concepts in my own life and relating the material to the various life experiences I have had.

The other parts of the course needed to fit into my model as well. The written content supporting the course was located on a website designed for the course. Hundreds of pages of material could be found by the student on this website. Included in the material is three papers done by students who took the course during its in-studio stage when it was being taped in front of a live audience of students. The papers demonstrated how the students were able to incorporate the course content into learning in their own lives so that the students could see specifically what would be expected of them in the two papers that they would be required to write. (They are also required to take two tests based on the written material they find attached to the website.)

However, one of the most exciting parts of the course, is the interaction between professor and students via e-mailed questions and answers. Students can earn extra-credit points by simply asking questions via e-mail. Or, when I send out a question to them via e-mail, if they elect to answer it, and the answer is worth sharing, they can earn extra-credit points this way as well. I plan on including the best questions and answers (mine and student) on the website so future classes can benefit from this dialogue.

LESSONS LEARNED FROM CREATING A TELECOURSE

In no way does any of the foregoing mean that my telecourse is flawless. Lots of limitations exist due in large measure to the limited resources I had to call upon. This limitation, when compared to the limitations of traditional courses is not in the least unique. In fact, I "modestly" contend that this is both the finest telecourse dealing with this topic to be produced and superior to a traditionally taught class in a number of ways. One of the reasons I make this contention is my hope that someone will identify for me a better course on this topic and then I will be able to learn from their efforts and improve upon my own. I deeply believe that this is the most important dimension of telecourses. Through them we hopefully will learn what others are professing and either learn from that or challenge their content. In fact, I hope to see in the future, telecourses that utilize more than one professor, more than one set of ideas---courses that challenge students to come to their own conclusions because the conclusions of the two or more professors that are presenting their ideas are at odds with one another. This, in fact, is the design I hope to implement in the next telecourse I produce. As I expand the number of distance education courses I offer, one of the unfortunate complications I may encounter is from accreditation organizations. Although these organizations tend to profess an openness to technological innovation, such claims often are used to hide their reluctance to change (Wilson, 1999). I hope, as I engage in accreditation processes, to assist my colleagues in seeing a vision of the future wherein technology is embraced without reluctance WHEN it is designed to create greater quality.

An old but very relevant quote by Gertrude Stein reminds us that: "Everybody gets so much information all day long that they lose their common sense." If technology is to be effective in assisting education in its efforts to teach effectively, it must not be used simply to create more information. Our goal should be to create ever greater quality, not just more of the same old material dressed up in new techno-garments. As Connick (1997) notes, the shift will be toward measuring outcomes and doing more with less.

In his effort to envision the university of the future, president emeritus of the University of Michigan, James J. Duderstadt (2000) states that: "Faculty members and administrators should work together to provide an environment in which change is regarded not as threatening but rather as an exhilarating opportunity to engage in the primary activity of a college or university: learning, in all its many forms...Given the current pace off change, colleges and universities may be virtually unrecognizable in the future" (B6). I hope that he is right, because the need exists for both higher education and the world at large to change dramatically and quickly toward a more cooperative world society that is less consumption oriented and more equitable in the sharing of resources. Technology holds the promise of assisting and expediting that needed change if we employ it in a manner consistent with the highest values of our democratic society.

REFERENCES

Carnevale, D. (2000). *New master plan in Washington State calls for more online instruction.* Chronicle of Higher Education, February 4, A50.

Carr, S. (2000). *As distance education comes of age, the challenge is keeping the students.* Chronicle of Higher Education, February 11, A39.

Carr, S. (2000). *Distance-education company woos bastions of the liberal arts.* Chronicle of Higher Education, January 28, A43.

Coe, JA. R., & Elliott, D. (1999). *An evaluation of teaching direct practice courses in a distance education program for rural settings.* Journal of Social Work Education, 35(3), 353-366.

Connick, G. (1997). *Issues and trends to take us into the twenty-first century.* In T. Cyrs, Editor: Teaching and learning at a distance: What it takes to effectively design, deliver, and evaluate programs (pp. 7-12). San Francisco: Jossey-Bass.

Cyrs, T. E. (1997). *Competence in teaching at a distance.* In T. Cyrs, Editor: Teaching

and learning at a distance: What it takes to effectively design, deliver, and evaluate programs (pp. 15-18). San Francisco: Jossey-Bass, pp. 15-18.

Cyrs, T.E. (1997). *Visual thinking: Let them see what you are saying.* In T. Cyrs, Editor: Teaching and learning at a distance: What it takes to effectively design, deliver, and evaluate programs (pp. 27-32). San Francisco: Jossey-Bass.

Duderstadt, J.J. (2000). *A choice of transformations for the 21st-century university.* Chronicle of Higher Education, February 4, B6-7.

Fitzgerald, E., & McNutt, J. (1999). *Electronic advocacy in policy practice: A framework for teaching technologically based practice.* Journal of Social Work Education, 35(3), 331-342.

Forster, M., & Washington, E. (2000). *A model for developing and managing distance education programs using interactive video technology.* Journal of Social Work Education, 36(1), 147-158.

Freddolino, P.P., & Sutherland, C.A. (2000). *Assessing the comparability of classroom environments in graduate social work education delivered via interactive instruction television.* Journal of Social Work Education, 36(1), 115-129.

Frost, Charles H. (1998). *Distance education for developing countries.* International Education, 27(2), 56-67.

Gibelman, M., Gelman, S.R., & Fast, J. (1999). *The downside of cyberspace: Cheating made easy.* Journal of Social Work Education, 35(3), 367-376.

Jaworski, J. (1996). *Production of audiovisual programs.* In Plomp & Ely's International Encyclopedia of Educational Technology, 2nd Ed. (pp. 213-216). N.Y.: Pergamon.

Johnson, A.K. (1999). *Globalization from below: Using the Internet to internationalize social work education.* Journal of Social Work Education, 35(3), 377-393.

Knott, T. (1994). *Planning and evaluating distance education: A guide to collaboration.* Memphis, TN: Diaphera Publications.

Kreuger, L.W. & Stretch, J.J. (2000). *How hypermodern technology in social work education bites back.* Journal of Social Work Education, 36(1), 103-114.

Orivel, F. (1996). *Economic evaluation of distance education.* In Plomp and Ely's International Encyclopedia of Educational Technology, 2nd Ed. (pp. 320-326). N.Y.: Pergamon.

Plomp, T., & Ely, D. (1996). *International Encyclopedia of Educational Technology, Second Edition.* N.Y.: Pergamon.

Potts, M.K. & Hagan, C.B. (2000). *Going the distance: Using systems theory to design, implement, and evaluate a distance education program.* Journal of Social Work Education, 36(1), 131-145.

Quam, J.K. (1999). *Technology and teaching: Searching for the middle ground.* Journal of Social Work Education, (35)3, 322-325.

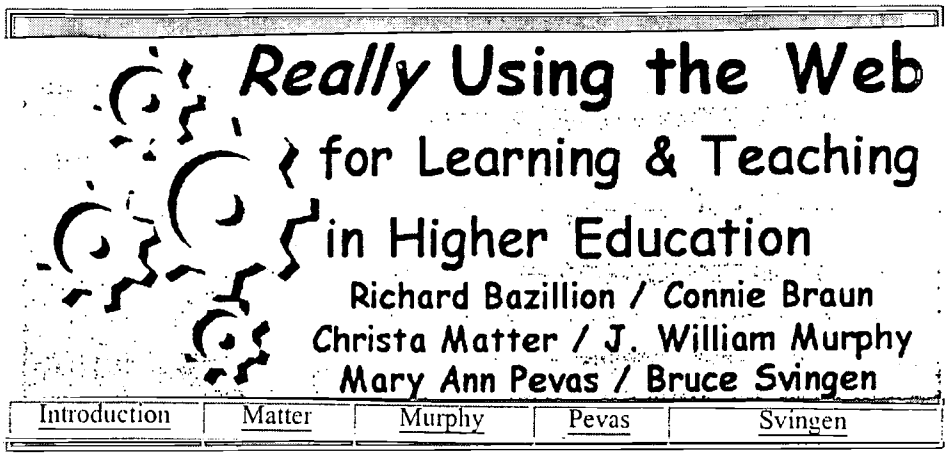
Simonson, M.R. (1997). *Evaluating teaching and learning at a distance.* In T. Cyrs, Editor: Teaching and Learning at a distance: What it takes to effectively design, deliver, and evaluate programs (pp. 87-94). San Francisco: Jossey-Bass.

Smith, N.L. (1996). *Evaluation models and approaches.* In Plomp & Ely's International Encyclopedia of Educational Technology, 2nd Ed. (pp. 238-246). N.Y.: Pergamon.

Tiffin, J., & Rajasingham, L. (1995). *In search of the virtual class: Education in an information society.* London: Routledge.

Wagner, E.D. (1997). *Interactivity: From agents to outcomes.* In T. Cyrs, Editor: Teaching and learning at a distance: What it takes to effectively design, deliver, and evaluate programs (pp. 19-26). San Francisco: Jossey-Bass.

Wilson, S. (1999). *Distance education and accreditation.* Journal of Social Work Education, 35, 326-330.



Introduction

Among the many courses now on the Web, there seems to be a great deal of what has been called "shovelware." Textual materials, such as syllabi and lecture notes, have simply been "shoveled" onto Web pages, with little use being made of graphics, hyperlinks or streaming media. When value-added effort is missing, the Web's teaching and learning potential remain untapped or unrealized.

The members of this faculty panel–all from Winona State University in Minnesota–have transcended shovelware to create Web-based courses with considerable value-added. They have adopted the Web as a means of giving students a different kind of educational experience: one that is both dynamic and intellectually rigorous.

Exposure to this new perspective on teaching came in a series of Web Camps offered at Winona State for two-and-a-half years, beginning in 1997. Working with easily-accessible development software (FrontPage™ and PaintShop Pro™), faculty applied their own creative energies to new Web-based courses. The Web Camps concentrated on showing faculty how to capitalize on the flexibility of the software in ways designed to promote learning. Training in specific software applications took a back seat to an exploration and application of effective educational principles in a Web-based environment. These principles can be transferred to any development-software package, because they are the common currency of Web-based teaching.

Design and functionality of the course Website should be simple (i.e. conform with the principle of Occam's Razor) Design should be consistent, with common features throughout
Interactivity is a paramount consideration The course must be dynamic, i.e. constantly evolving and improving Humor should be included.

The courses showcased and analyzed here respect each of these principles, at least to some degree, and illustrate other important design criteria as well. Especially significant are the built-in assessment tools that provide evidence for the effectiveness (or lack of it) of Web-based teaching.

Clearly the Web is a medium that promises almost limitless opportunities to experiment and to find better ways to promote student learning. If Web-based courses are developed in such a way as to remain dynamic, then innovations can be incorporated as they appear. Perhaps the greatest advantage of Web-based teaching, then, is that it retains its freshness through a process of evolution directed by faculty themselves.

Christa Matter (Physical Education & Recreation)

Really Using the Web for Learning and Teaching in Physical Education

As we enter the new Millennium, technology and education have merged to enhance teaching and learning. More specifically to the field of physical education, "a student may learn the rules of a game, the method of keeping score, and the many do's and don'ts via a computer."1 In an effort to merge technology and education a number of tutorial sessions for faculty to develop Web sites, more commonly referred to as "Web camps", have been offered at Winona State University. Rather than learning about specific software and hardware programs, the "Web camp" utilized easy-to-use programs such as FrontPage and PaintShop Pro to teach the participating faculty to use technology in their respective disciplines. The "Web camp" I participated in prompted me to develop a Web site (http://phil.winona.msus.edu/cmatter) for my physical education activity and theory-based classes at Winona State University.

A common error by a great many educators attempting to merge technology and education is to only use the Web site as a "bulletin board" to post course requirements and the syllabus (also referred to as "shovelware"). Keeping this in mind, I set out to develop a Web site that could not only be used as an informational resource, but could also provide enriching activities for students to learn more about their respective subject matter. My Web site includes individual Web pages for four activity-based physical education courses and three theory-based physical education courses. The pages provide additional information about the courses and
subject matter, links to professional organizations as well as various on-line assignments.

My activity class assignments afford students further learning opportunities without the time constraints of a fifty minute class session, where activity should be the primary focus. More specifically, interactive assignments for each activity course have been developed. Additionally, in an effort to reduce the amount of wait time for feedback on assignments, on-line "forms" have been created with a confirmation page to immediately notify the student of their results. Assignments for badminton include searching the Internet to compare the "official" laws of play with "recreational" laws of play, a self-evaluation form in which students evaluate their skills, a court quiz and final exam. Volleyball assignments include a court quiz and final exam
along with a self-evaluation of skills, a discussion of the history of volleyball and an observation form to use when attending a home WSU Women's Volleyball match. The racquetball page also contains exams and a court quiz but also includes a form to record the student's play/practice session outside of class. And finally, assignments in weight training include a training log to be submitted weekly, a group assignment defining strength training terminology and a final exam.

The theory-based Web pages provide the student with access to additional information for class discussions as
well as assignments and opportunities for more advanced learning of the specific subject matter from the convenience of the student's home. For example, several on-line projects have been developed for my three
physical education theory courses. On-line quizzes and exams were prepared (with due dates indicated on the
form) which allowed for students to take the test when it was conducive for them. Students electronically
submitted abstracts of research articles, which pertained to the Perceptual Motor Development class. Assignments in the Developmental/Adapted Physical Education class include a discussion forum, a project
related to physical education and health standards for elementary, middle school and secondary students in the
state of Minnesota, and the opportunity to communicate electronically with a professional in the field or to
post a question related to Adapted Physical Activity on a national physical education Web site (PE Central).

The opportunity to infuse technology into the delivery of the theory course curriculum is strongly encouraged
by WSU's College of Education "Effective Educator Program". The program is a model that links four domains:

Knowledge, Skills, Professionalism and Practice to prepare future effective educators. Under the Skill domain
of the effective educator program, the student will "use educational technology to meet the goals and objectives of classroom instruction and management."2 Consequently, students are expected to learn and demonstrate several competencies in relation to the tool of technology. The assignments created specifically
for the upper level theory courses afforded students the opportunity to apply what they had learned regarding educational technology.

Feedback from the students has reflected a successful integration of technology into the physical education
courses I instruct. Through end of course evaluations, students commented positively on the Web site assignments. Some comments reflected further interest in the subject matter as a direct result of completing
the specific Web site assignments. For example, when asked to comment on the effectiveness of the activity
class Web pages, students offered the following comments:

Easy to use and very helpful
Set up well and gave basic information
I liked how it allowed us to do the assignments off the Web.

It was equally important to gather information from the students regarding their overall impressions of the
Web site based activity class. Again, students provided positive feedback in relation to the Web page assignments and exhibited an overall positive impression of the Web site. Selected student comments included:

I really liked it
It was fun, I enjoyed it-- good technique
It was good because it gave us more time in class to play (volleyball)
Worked out better than handing them (assignments) in
Sending them (assignments) was a great idea--less paperwork to worry about
Learned a lot more skills--thanks.

With the advent of computer assisted instruction, assignments for four activity courses and three physical
education theory courses at Winona State University have been greatly enhanced by the technology offered
through course Web sites. Besides saving paper, students have the opportunity to continue their inquiry of the
subject matter individually as they complete the assignments online. Students have the flexibility to complete
assignments or pursue additional links of information provided through resources from the Internet. Because
time is not allotted during class sessions to complete written tests or assignments, the activity courses remain
entirely activity based where additional time for skill development is provided.

Higher education's fundamental goal of encouraging self-motivated learners may be enhanced by utilizing the
technology of a Web site in physical education courses as well as other subjects. "If we consider which factors
of computer mediated communication will be most important to education in the information age, it seems our
goals should be to develop self-motivated learners and help people learn to find and share information."3 The

intent of my Web site is not only to infuse technology into the curriculum but also to encourage students to
think critically and work cooperatively and collaboratively with their peers. Ultimately, Web site technology
has provided and will continue to provide enriching and extending activities for the students while providing
the instructor with less paperwork (although more time spent reading email assignments) and more time to
dedicate personalized instruction during the actual class session. As educators, the more we recognize and
educate ourselves on the merging technologies in education, the more our student's education will be enhanced in
the 21st century.

1. Donnelly, Joseph E. Using microcomputers in physical education and the sport sciences. 1987 Human Kinetics
Publishers, INC, Champaign, IL.

2. Effective Educator Program: Winona State University Educator Handbook, Effective September 1998.
College of Education, Winona State University, POB 5838, Winona, MN, 55987

3. Berge, Z.L., Collins, M.P. Computer Mediated Communication and the Online Classroom. Volume 1: Overview
and Perspectives. 1995. Hampton Press, INC, Cresskill, NJ

J. William (Bill) Murphy (Administrative Info. Systems)

Really Using the Web for Learning and Teaching in Higher Education

In August 1999 I had the opportunity to attend WSU's Web camp which was my first real experience with
using Front Page and actually creating web pages. I had experimented with Publisher but didn't get too far.
Now I was hooked. I immediately started loading syllabi for my classes. This was just too good to be true. No
more mass distribution of hard copy, no more excuses for students not being able to locate their copy of the
course syllabus or complete assignments because of misplaced notebooks.

In the two weeks prior to the opening of the fall semester, I created web pages for four courses. As my interest and fascination grew, so did the degree to which I expanded my web pages. I started adding Microsoft PowerPoint slide presentations. I even added a prerecorded message to my personal web page.

On the first day of class, I announced to the students that I had gone high tech! What a mistake! Now there
was no turning back. The students could not believe it one night when I actually used the overhead projector. I
was reminded of my "high tech" statement. From then on, the overhead got rolled into a corner and everything I
did--from ice breakers to team activities, assignments, outlines, electronic resources, etc.--went up on the web.

What I very quickly discovered was that students at WSU are becoming increasingly computer savvy.

The laptop university has challenged our students and faculty to stay up on technology. Students respond positively to the web site and like the idea of being able to check the site for weekly or daily assignments.

While certain elements are still "shovelware" it is what I have done with these that make a difference. For instance, the syllabus is constantly evolving particularly in terms of course schedule and availability of assignments and resources. Students become acclimated to checking the web site for updates and even comment if something has not appeared regularly or in a timely fashion. The ability to eliminate the middle person—I load the computer applications student data disk onto my web site, list the day's assignments or week's assignments, and create the links. The students open the web page, click on the appropriate files, and download to their disks.

My assignments are so much more current because I can locate resources myself or ask the students to find resources. As part of two graduate/under-graduate courses where the grad students have to do extra work as part of the class, I asked the graduate students l to locate ice breakers for training classes and present these at the beginning of class. The graduate student selected the nights to do their ice breakers. Even though a number of books are available, I found the students searching the WWW and bringing in fresh, new ideas. The graduate students also had to locate electronic resources that could be used for various topics or for the course as a whole. These resources were then added to the course syllabus.

One idea that caught on very quickly and worked very well was using discussion forums. In the beginning I posted articles and started the discussion online with a question. About midterm, I gave the graduate students the responsibility for identifying an article, posting it to the forum, and leading the discussion.

The student feedback regarding the discussion forums has convinced me that this will be an integral part of my future classes. Students particularly liked the flexibility of being able to read postings at their leisure. Others thought it was a great way to add value to the class and talk about other topics that otherwise may not be covered or able to be discussed. Other benefits identified by the students included the following:

1.using a form of technology with which I was unfamiliar.
2.relating experiences on many different training topics.
3.transforming my view of other students in the class.
4.reading the sometimes-divergent viewpoints of the class.
5.associating faces with comments.

The student evaluations have been much more positive, I think in part, because what I am trying to do with the web is so much more in line with where students are coming from today as compared to other times in my career. I have gone from the era where students sat in lecture classes and tested with hard copy tests and Scantron sheets to students who were weaned on Atari and Pac Man. Today's students thrive on online research, discussion forums, and interactive computerized tests.

We have a large number of techno savvy students who appreciate the flexibility of the web site. Several

non-traditional students attended class only on TTH while my computer application class was MWF. They were
able to access the assignments and student files via the www and with my permission only attended class for
the tests. Communication outside of class was handled by email. My tests were interactive and computerized,
but our capability for delivering the test at that time was limited to on-campus labs.

My personal observations based on using the web last semester include:

1.Email from students increased providing opportunities to interact on a more personal basis that would ordinarily never happen because they may not come into the office.
2.Opportunities to change schedules in a short time—nothing set in stone as on a printed syllabus. Whereas
I used to use the term tentative schedule, I now believe dynamic schedule is more accurate.
3.While there is considerably more work at the front end getting web pages designed and operational, the
back end is simplified because hard copies are eliminated and forms and responses can be accessed via the web or email.

My future plans for "really using the web" include the following:

1.videotaping student presentations with a digital camcorder, downloading the videos to the web, and having
students view and evaluate their oral presentations via their laptops;
2.posting (with appropriate permissions) anonymous examples of student work;
3.incorporating Net Meeting software for team activities;
4.increasing the use of discussion forums; and,
5.developing an internet marketing class in which students will develop web pages or organizations and businesses.

The August Web Camp was one of the highlights of my ten years at Winona State and, in fact, my entire teaching career because it has opened up new avenues for me both as an educator and as a member of professional organizations. Honestly, I believe this was one of the most exciting experiences I can remember
because it has equipped me with new skills and options for delivering learning and information to my students
and my colleagues both at Winona State and at other institutions.

Mary Ann Pevas (Economics)

Learnings from Using the Web in the Teaching of Economics

As an individual who is naturally drawn to puzzles, challenges, and gadgets, I have been exploring the use of
various means of bringing technology into my classroom since the early 90s. However, it was not until I was
given the opportunity to focus on what was possible through an eight day web camp did my natural bent explode and open my imagination into new creative ways to teach economics. I can no longer imagine teaching
without the use of what is possible through the use of the web. I am hooked, and delighted to be for this experience has rejuvenated my imagination and my interest in leading students into the exciting world of economics. The dismal science no longer needs to be confined to pure theory or to heavy textbooks. The theoretical content remains and must be learned, but through the use of the web I have found the means to

bring students to the marketplace of today and the marketplace to them in the classroom.

However, although the benefits are many, the costs are many also. Some of the learnings I have experienced from the use of the web in teaching were unexpected and a shock when I encountered them. Others have been pure delight and resulted in a burst of enthusiasm and energy in my teaching. Although I am sure many who will read these revelations will recognize them as part of their own experience, other readers may be about to embark on a journey into the world of the web and computer technology in their teaching and will appreciate the insights as cautions to take into their journey. Regardless I offer them as a summary of my experience traveling into this new era of the 21st century of new and ever growing technological tools in the classroom.

The first and deliciously surprising discovery was my own enthusiasm for the new possibilities of presenting content. The web was there, growing exponentially and waiting to be explored. I had been exploring it for some time but did not have a window through which I could bring it into the classroom. Web camp gave me that window and set my imagination free to develop new ways to learn and teach. The realization of the possibilities gave me a high.

The second learning was this new creation was going to take time. Now that I had learned some new skills, I wanted to use them. My ideas grew faster than the time I had available to develop the ideas. The learning curve of mastering these new skills was steep and suddenly I found I needed more time than I had to implement them. Web camp gave me a survey taste of the possibilities and a survey experience, but as the semester began, I realized I did not remember all of the details of how to do x and y. What saved me from spending excessive fruitless time deepening my knowledge and accomplishing my goals was the ongoing availability of the web camp instructor throughout that first semester. Consequently, the time I did spend learning and relearning how to grow my web was spent efficiently and effectively.

Third, my objective in using the web was to teach and not to distract. I found worthwhile content and worthless content on economics on the web. If I was going to ask my students to spend time using the web in the learning of economics, I wanted them to experience the learning as fruitful and not frustrating or meaningless. I spent hours searching for just the right site or the right information to enhance the objectives of the class before offering the content to the students. The web was to enable them to broaden their understanding of economics and not lead them astray from it.

Fourth, the web opened up the classroom into more efficient teaching and learning experiences. As one example, I used the discussion forum as a job market to enable students to experience a tight labor market as I was teaching about unemployment. The students in the classroom were divided into employers who had job openings and potential employees searching for jobs. Job openings were numerous. Potential employees were relatively scarce. Points were awarded for the achievement of filling the jobs or finding a job. Students

learned how to use the discussion forum as well as a bit about the difficulty of finding the right fit between
jobs and skills in a booming economy.

Finally, and this is probably the most basic learning I could share. If any of the above is to be achieved, it is
absolutely necessary to have ongoing competent technical support. Technical support employees are always
growing in their own skills and knowledge. They become known as "good" and are often pulled away into more
challenging jobs. The new replacement staff may be at the bottom of their own learning curve in being support
to an eager faculty. The impact on the faculty can be immense and often unrecognized by the technical support
staff. Needless to say, it can be very frustrating and wasteful of precious time when unexpectedly the
software which an instructor has become dependent on using is no longer available in the local network.

Any change in the technology used by the faculty on the part of the support staff needs to be done carefully
and communicated thoroughly before changes are actually made. And even more important, any proposed change
needs to be thoroughly tested and debugged before proposed as possible changes. Faculty ought not to be
asked to spend their time to test new programs unless they knowingly and willingly engage in such activities.
And the middle of a semester is not the time to make major changes in the technological base used by faculty.

Regardless of the unforeseen headaches one may encounter in using the web in the classroom, the benefits far
outweigh the costs. I would wholeheartedly encourage any instructor to explore the possibilities of using the
web in the classroom. However, I would also forewarn them that they will be treading new territory and should
not be surprised by the problems they will encounter as they and their students grow into a new age.

Bruce A. Svingen (Chemistry)

The Web as a Positive Force in Biochemical Education

In biochemistry one of the most difficult subject areas for undergraduates is to master the structure-function
relationships for large molecules of biochemical significance. Structure-function relationships are a key tenant
of chemistry. "If you know what atoms makeup a molecule and how they are arranged you understand the
physical and chemical properties of that molecule." The teaching of structure-function relationships begins
early in first year chemistry where concepts for model building are introduced. Every first year student
learns the basics of valence shell electron-pair repulsion (VSEPR) model building along with the basics of
chemical bonding. Students build simple models with ball and stick or space filling model kits. The ability to
build and manipulate models is key to the students developing an understanding of structure and

chemical
reactivity.

When students move on to sophomore organic chemistry they once again find that structure-function is at the
heart of understanding organic chemistry and again the building of models is key to their learning about functional groups, isomerism and bonding. In the era of computer labs and laptop computers the traditional
ball and stick model kits are being rapidly replaced by modeling software packages of varying degrees of
sophistication. (There are many modeling software packages that are available at Winona State University.
We have been pleased with our experiences using a software package called HyperChem.)

Even with the availability of such modeling software, we still encourage the students to build ball and stick
models when structural questions need clarification. First because the molecules being studied are a size and
complexity amenable to model building, molecular weights of ~ 200 or less and total atom numbers of 30 or
less, and second because for many students one just can't replace that experience of touching and manipulating
a physical representation of a molecule.

The benefits of the model building the students learn in their first two years is irreplaceable, but when the
students enter biochemistry such methods are no longer sufficient for the study of large biomolecules such as
proteins and nucleic acids or large molecular assemblies such as phospholipid bilayer membranes. These molecules may have molecular weights ranging above 200,000 and more than 5,000 atoms. Even if they could
build models by methods familiar to them they would not be amenable to manipulation and the threat of physical injury to the student would be real.

We wanted to address this problem of model building for biochemically relevant macromolecules via the World
Wide Web. With our web page we wanted to give our students the tools and opportunity to explore macromolecular structures interactively. Our hope was that our web page would enhance their learning opportunities in the area of structure-function relationships for these large molecules.

Our first goal was to give students the tools needed for their explorations into the structure-function relationships of biochemical macromolecules. As judged by our students, and by us, there are several software
that packages have proven very useful for the study macromolecular structures of biochemical significance.
These programs are available free and can be downloaded from the Internet. Additionally the structural databases that these programs use are also available for no charge over the Internet. The first program we have used extensively is RasMol (Raster Molecules). It was written by Roger Sayle and is available from
several sites on the web. (RasMol version 2.7.1 is available for download from
http://iucr.sdsc.edu/iucr-top/cif/software/rasmol/).

RasMol translates a structure file in pdb (Protein Data Bank) format from the x-, y-, z-, coordinate of each
atom based on x-ray crystallography or nuclear magnetic resonance studies, into a 3-dimensional structure
that can be manipulated. The program is available for Windows, MacOS and UNIX platforms. pdb files

can be
found at several web sites including the Research Collaboratory for Structural Bioinformatics (RCSB) at Rutgers University (http://www.rcsb.org/pdb/). RasMol lets one display pdb files in a number of formats including wireframe, spacefilling and ribbons. RasMol also lets one select specific parts of a molecule to highlight for display via its command line editor.

For classroom use one can also compose RasMol scripts which will display the molecule in a desired view
without having to go though the individual command line instructions needed to achieve the desired view. A
limiting factor is that RasMol 2.7.1 cannot be used to edit pdb files. The ability to edit pdb files would give
our students the opportunity to build their own structures and to combine files to allow the direct comparison
of structures. This need for a pdb file editor was filled by the Swiss-pdb viewer, which is available for download from Glaxo Wellcome Experimental research. Although the Swiss-pdb viewer is a strong editor it is
restricted to wireframe views. Another version of Rasmol, which can manipulate multiple molecules, is available
from the Modular Chemistry Consortium project at the University of California Berkley (http://mc2.cchem.berkeley.edu/Rasmol/v2.6/). Our class page brought together the links for programs and
databases, the tools our students needed.

To introduce our students to the power and usefulness of the modeling of macromolecular structures we incorporated their use into our lectures. To "whet their appetite" we liberally used these programs and databases for the preparation of lecture slides and demonstrations. Slides from lecture were added to our class homepages for students to use. In addition we hyperlinked to the "raw" pdb files so that the students
could start their own interactive exploration of the structures outside of the formal classroom. We firmly believed that through the students' exploration of the structures the real learning of structure-function relationships would takes place.

While we cannot demonstrate the interactive opportunities offered by our web in these pages we can perhaps
give you a feeling for what the students experience by graphically examining insulin, a relatively simple protein. Insulin is composed of 51 amino acids, 460 atoms, in two peptide chains. Figure 1 is a wireframe
representation of insulin.

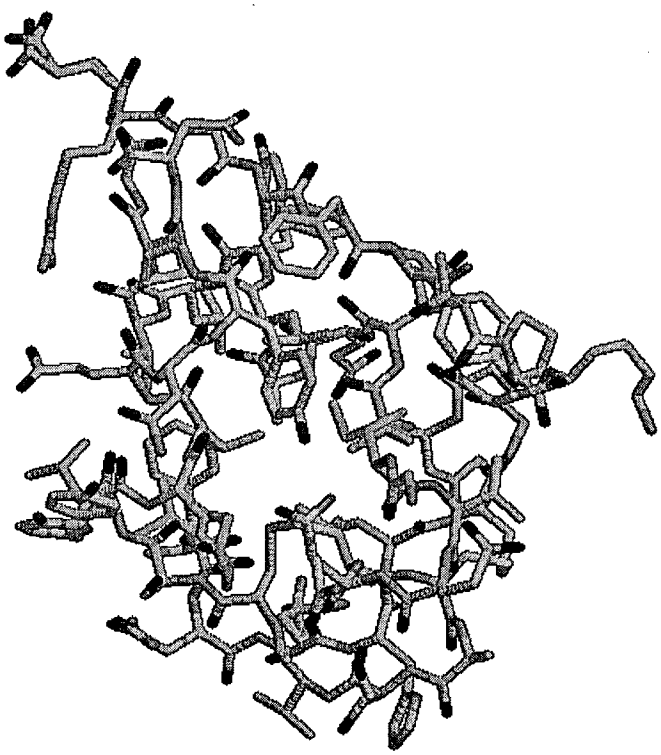


Figure 1

Although difficult to see because of size restrictions from this structure students can see structural details such as the identity of the individual amino acids and their position in the structure, the placement of disulfide bonds and postranslational modifications. Figure 2 is a ribbon representation of insulin.

Figure 2

Figure 2 shows the broader relationships between the two chains and the nature of peptide secondary structure. Figure 3 is a space filling representation

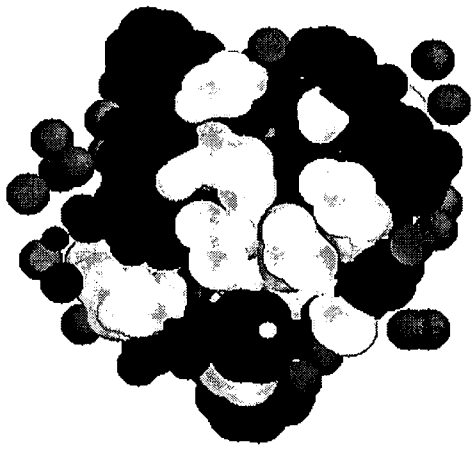


Figure 3

In figure 3 the nonpolar amino acids have been displayed in yellow and the polar amino acids in blue. This representation of insulin clearly demonstrates that the nonpolar amino acids are predominantly found in the interior of the molecule as would be consistent with the hydrophobic effect that dominates protein structural conformation.

These are static representations but they give one a clear understanding of the power of modeling software in understanding macromolecular structure. Add to this the dynamic exploration abilities the students have by investigating the structure with any of the three pdb viewers and one can appreciate the usefulness of modeling to the student's learning process.

Along with the links to software and databases and the encouragement to explore on their own from lecture, the rudimentaries of command line editing for RasMol 2.7.1 and the more powerful editing abilities of the Swiss-pdb viewer were addressed in help sessions and tutorials.

How well did it work? We believe it was a rousing success on many fronts. First, judging by the number of students that were involved with informal help sessions on RasMol it was successful at engaging the students in the study of protein structures. Second, based on the number of pdb files and file links that the students submitted to add to the web page it was certainly successful and they enjoyed their studies. Third, in student evaluations of those that had laptop computers and were part of the university's laptop initiative t it was useful. And finally, student performance on exam questions dealing with macromolecular structure increased
noticeably across the board. This last point is of course what we as teachers are most interested but we feel it wouldn't have been possible if the students had not had the opportunities provided by having access to the positive force of web resources.

Introduction to Music Theory and Aural Skills: A Study in Developing an Interactive Music Learning Environment for the Internet

Mid-South Instructional Technology Conference
Middle Tennessee State University
April 9-11, 2000

Dr. John A. Steffa, DMA
Associate Professor of Music
Department of Music
Murray State University
Murray, Kentucky

ABSTRACT

Significant numbers of incoming music students at this regional public university are determined to have less than adequate preparation in fundamental music theory concepts. In the Fall of 1998, a web course called Introduction to Music Theory and Aural Skills was published as an interactive and self-contained learning environment to provide a partial solution to this problem.

This presentation will provide an overview of the course design, highlighting aspects of HTML and JavaScript which provide interactivity. Recent course revisions have involved rewriting the material using Macromedia's Director. Some initial comparisons and contrasts between the two authoring environments will be made.

BACKGROUND

By means of diagnostic examinations, significant numbers of incoming college freshman music students at this regional public university are determined to have less than adequate preparatory music theory knowledge. To enroll in and successfully pass the first semester of four sequenced levels of music theory courses, a vast majority of students first need remedial help in such fundamental concepts as constructing scales, labeling intervals, counting simple rhythms, naming key signatures, broadly defining the most basic terminology and recognizing common notation symbols. A course called Introduction to Music Theory and Aural Skills was designed and implemented on campus to meet that need in the Fall of 1991.

Although the creation of the course "fixed" the problem of remedial skills at the college level, students with a weak theoretical background continue to enroll as music majors in increasing numbers. In seeking further resolution to the problem, two options became the focus of attention when the decision was made to develop an internet version of the fundamental music theory course. Create an interactive web course that could be taken by: 1) anyone with a computer

with no help from an instructor, or 2) anyone who has paid the fees to be officially enrolled allowing for minimal help from an instructor. Establishing that audience base meant that the course could be completed by: 1) college freshmen music majors who are diagnosed as being "border line" in music theory preparation; 2) high school students (in a music class that is supervised by a music instructor); 3) high school students on their own initiative (to prepare for college level diagnostic exams); or 4) anyone with an interest in the fundamentals of music theory.

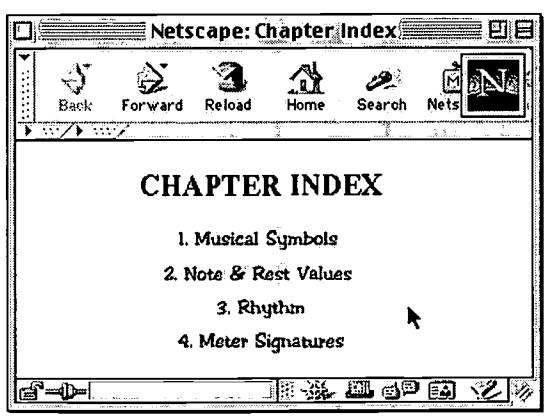
INITIAL DESIGN CONSIDERATIONS

Practical design considerations for an internet music theory fundamentals course involved recognizing the need to create musical examples as images, musical examples as sound files and an interactive environment as an enhanced learning tool. To create an interesting learning interface, certain programming objectives and considerations were established as high priority.

First, reading from the computer screen can be naturally interactive. A user can be asked to react to written text by pointing and clicking the mouse. Instructions can be highlighted, essential points can be clarified and questions can be answered by passing the mouse over text or images. Second, hearing the examples is of paramount importance. If the sound bytes are small enough to be downloaded quickly, the computer is an adequate tool for providing audio examples. Many software titles, such as "SoundEdit" and "Deck", are designed to expedite the creation of audio examples. When discussing scales, students are able to experience the difference between major and minor by listening to examples of each. When determining the characteristic sound of a particular interval, no verbal explanation can replicate the actual sound of that interval. Third, the course had to be cross-platform and current (but not "cutting-edge"). Most public school systems in our region do not have the funding to maintain technological currency, so remaining behind the "state-of-the-art" by one generation seemed a practical consideration. Fourth, internet students must have the same ability to put pencil to paper as the students who take the parent in-class course. For that reason, Adobe Acrobat files were created and made available for download. Such files include manuscript paper for drawing symbols, practice tests which include musical examples and glossary files which can be downloaded, printed and studied.

CREATING INTERACTIVITY

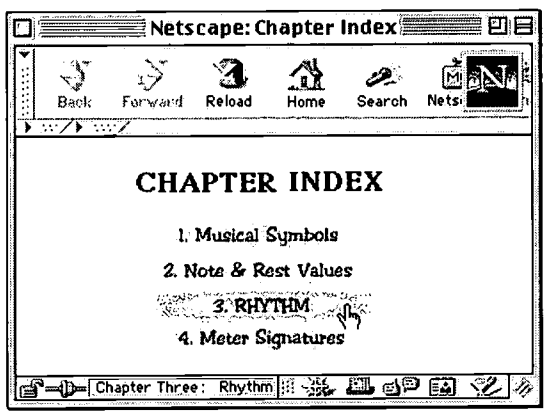
Interactivity was deemed at the outset of development as being very important. The course author and developer is not a programmer and was initially confined to learning to writing in HTML code. To create the interactive element, some public domain JavaScript was adapted to suit the needs of the course.



The following basic HTML code is all that is needed to create a web document that prints CHAPTER INDEX in the middle of a white page and places four clickable images below that.

```
<HTML>
<HEAD>
<TITLE>Chapter Index</TITLE>
</HEAD>
<BODY BGCOLOR="#ffffff" ALINK="#000000" VLINK="#595c5e">
<P ALIGN=CENTER><B><BR>
<FONT SIZE="+2">CHAPTER INDEX<BR>
</FONT></B></P>
<P ALIGN=CENTER><A HREF="../chapter1/ch1page1.htm",window.status='Chapter One: Musical
Symbols';return true" ><IMG SRC="pix/ch1off.gif" BORDER="0"
NAME="toc1" ALIGN="MIDDLE" WIDTH="151" HEIGHT="22" NATURALSIZEFLAG="0"
ALT=""></A> <BR>
<A HREF="../chapter2/ch2page1.htm",window.status='Chapter Two: Note and Rest Values';return
true"><IMG SRC="pix/ch2off.gif" BORDER="0"
NAME="toc2" ALIGN="MIDDLE" WIDTH="151" HEIGHT="22" NATURALSIZEFLAG="0"
ALT=""></A> <BR>
<A HREF="../chapter3/ch3page1.htm",window.status='Chapter Three: Rhythm'; return true"><IMG
SRC="pix/ch3off.gif" BORDER="0"
NAME="toc3" ALIGN="MIDDLE" WIDTH="151" HEIGHT="22" NATURALSIZEFLAG="0"
ALT=""></A><BR>
<A HREF="../chapter4/ch4page1.htm",window.status='Chapter Four: Meter Signatures';return
true"><IMG SRC="pix/ch4off.gif" BORDER="0"
NAME="toc4" ALIGN="MIDDLE" WIDTH="151" HEIGHT="22" NATURALSIZEFLAG="0"
ALT=""></A><BR>
</P></BODY>
```


To add interactivity to the images, such as "rollovers", JavaScript is necessary. The following added code (in bold) allows each of the above images to change as the mouse passes over any one of them.




```
<HTML>
<HEAD>
<TITLE>Chapter Index</TITLE>
<SCRIPT LANGUAGE="JavaScript">
{ toc1on = new Image();
toc1on.src = "pix/ch1on.gif";
toc2on = new Image();
```

```
toc2on.src = "pix/ch2on.gif";
toc3on = new Image();
toc3on.src = "pix/ch3on.gif";
toc4on = new Image();
toc4on.src = "pix/ch4on.gif";
toc1off = new Image();
toc1off.src = "pix/ch1off.gif";
toc2off = new Image();
toc2off.src = "pix/ch2off.gif";
toc3off = new Image();
toc3off.src = "pix/ch3off.gif";
toc4off = new Image();
toc4off.src = "pix/ch4off.gif";
}

function img_act(imgName) {
{ imgOn = eval(imgName + "on.src");
document [imgName].src = imgOn;
}
}
```



```
function img_inact(imgName) {
{ imgOff = eval(imgName + "off.src");
document [imgName].src = imgOff;
}
}
</SCRIPT>
</HEAD>
<BODY BGCOLOR="#ffffff" ALINK="#000000" VLINK="#595c5e">

<P ALIGN=CENTER><B><BR>
<FONT SIZE="+2">CHAPTER INDEX<BR>
</FONT></B></P>
<P ALIGN=CENTER><A HREF="../chapter1/ch1page1.htm"
onMouseover="img_act('toc1'),window.status='Chapter One: Musical Symbols';return true"
onMouseout="img_inact('toc1')"><IMG SRC="pix/ch1off.gif" BORDER="0" NAME="toc1"
ALIGN="MIDDLE" WIDTH="151" HEIGHT="22" NATURALSIZEFLAG="0" ALT=""></A> <BR>
<A HREF="../chapter2/ch2page1.htm" onMouseover="img_act('toc2'),window.status='Chapter Two:
Note and Rest Values';return true" onMouseout="img_inact('toc2')"><IMG SRC="pix/ch2off.gif"
BORDER="0" NAME="toc2" ALIGN="MIDDLE" WIDTH="151" HEIGHT="22"
NATURALSIZEFLAG="0" ALT=""></A> <BR>
<A HREF="../chapter3/ch3page1.htm" onMouseover="img_act('toc3'),window.status='Chapter Three:
Rhythm';return true" onMouseout="img_inact('toc3')"><IMG SRC="pix/ch3off.gif" BORDER="0"
NAME="toc3" ALIGN="MIDDLE" WIDTH="151" HEIGHT="22" NATURALSIZEFLAG="0"
ALT=""></A><BR>
<A HREF="../chapter4/ch4page1.htm" onMouseover="img_act('toc4'),window.status='Chapter Four:
Meter Signatures';return true" onMouseout="img_inact('toc4')"><IMG SRC="pix/ch4off.gif"
BORDER="0" NAME="toc4" ALIGN="MIDDLE" WIDTH="151" HEIGHT="22"
NATURALSIZEFLAG="0" ALT=""></A><BR>
</P>
</BODY>
```

Part of the code (window.status='Chapter Three: Rhythm';return true) also allows for an additional message in the STATUS BAR at the bottom of the window. This is a device particularly useful in revealing answers to questions which may be posed in the main body of the document.

The code which creates the JavaScript rollover was the primary source code for creating most of the interactivity required for this course. Rollover images may be used for revealing answers, animating examples and manipulating images as the user passes the mouse over a picture or clicks on a designated spot within an image map. The code was copied and pasted into documents, and edited, as the instructional needs arose during the design stages of course development.

COURSE CONTENT

Course content is very similar to the on-campus version of the course. It also follows the same content outline as many programmed textbooks and could be used to supplement most of them. The chapters include:

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Chapter One: Musical Symbols
Chapter Two: Note and Rest Values
Chapter Three: Rhythm
Chapter Four: Meter Signatures
Chapter Five: Intervals
Chapter Six: Modes
Chapter Seven: Major Scales
Chapter Eight: Minor Scales
Chapter Nine: Key Signatures
Chapter Ten: Triads

Near the end of most chapters there are several introductory eartraining exercises. Some of the exercises include intervallic, melodic and rhythmic identification. Most melodic and rhythmic exercises are very brief excerpts, allowing for relatively fast downloads. For those enrolled in the course, cues to request tests are provided periodically throughout the course. At appropriate times, four major exams are emailed to students. Instructions are given to download the Adobe Acrobat file (in PDF format), print it out, fill it out and FAX it back to the instructor within 24 hours. A final exam may be taken anytime during the university's final examination week.

ADMINISTRATION ISSUES

Users may access the course without any restrictions or they may formally enroll to take the course for college credit through this university. Only enrolled students are able to email requests for tests at appropriate times and to ask for help from the instructor.

The involvement of the instructor in the course administration is quite minimal. The university registrar completes the enrollment process and handles all fees and records, the Office of Continuing Education promotes the course and disperses information regarding enrollment procedures and course requirements, and the Department of Music handles referrals and answers departmental questions. The maximum enrollment for the course is officially set at one student so that all students above that number must seek special approval to register for the course. An unofficial enrollment cap has been set at 10 students. The initial contact with the instructor is usually nothing more than an email request to get started on the course.

Since the implementation of Introduction to Music Theory and Aural Skills (the web version) in the Fall semester of 1998, approximately 35 students have received credit by taking the course. One student received a failing grade while all others received a letter grade of "C" or better.

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SOME FINAL PROGRAMMING OBSERVATIONS

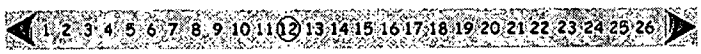
A new edition of the course is currently underway and involves reprogramming the content using Macromedia's Director. The principal objective in the revision is cosmetic: to make the material more appealing and presentable. The first two chapters have been completed and some initial observations can be made, comparing and contrasting the two developmental methods.

1. Using software, such as Director, to create an interactive learning environment seems to save no time when comparing that development method to writing in JavaScript-enhanced HTML code. For the inexperienced programmer, both writing methods will require a research period, whether to learn how to use the software being employed or to learn the language of HTML (and how to adapt JavaScript). The two examples shown below represent a means of navigating from page to page. The first is programmed in HTML and the second in Director. While the objective of each is the same, the manner by which each is programmed is very different.

HTML Page Links

Go to Page: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

DIRECTOR Page Links



2. Java is a programming language that is nearly universally understood by newer browsers. Downloaded documents created with Director will not be understood by a browser unless the appropriate helper software (available for free) has been installed.

3. Each chapter has between 15 and 25 pages of content. Each page written in HTML is a separate document and is loaded individually to the local computer for use and each takes only a few seconds to load. Using Director, the entire chapter is written as a user-controllable document and each chapter requires a substantially longer loading time. However, after the entire chapter has been downloaded to the computer, each page is nearly immediately accessible.

4. Using HTML, certain special effects require more extensive programming skills than this author has acquired. Many of those same effects are readily available using Director. Some of those effects include animating images and dissolving and wiping between pages and graphics. Of particular note, clicking on an image to activate an audio file was a programming problem with JavaScript. Using Director, the image was imported as a cast member, given a behavior (on mouseDown) and the task was no problem.

5. Since graphics are treated as sprites in Director, images, unusual fonts, backgrounds and banners are not a

problem to incorporate onto a page. Controlling such elements, using motion, color changes and fades is quite easy. Using HTML to program content, control over those individual elements is difficult to impossible without the aid of Java.

6. Finally, an observation about security can be issued. An HTML document contains code that, without encryption, can be viewed by anyone. If a student wants to find an answer to a question that is posed (on a practice test, for example), s/he can, with most browsers, view the document source. Documents created with Director may be saved as Director files which, in turn, may be referenced by HTML documents. The student (or user) is not immediately accessing the Director document - only a reference to it. That means the code is not immediately accessible and a greater degree of security is achieved.

CONTACT

The course

Introduction to Music Theory and Aural Skills (the complete HTML course)
http://www.murraystate.edu/qacd/cfac/music/MUS109entry.htm
Introduction to Music Theory and Aural Skills (Chapter One: Musical Symbols, the Director version)
http://www.murraystate.edu/qacd/cfac/music/mus109e/chapter1/chapter1.html

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Case Study:

Using Information Technology at ETSU

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Abstract:

This is a case study of the development of the Using Information Technology computer literacy course at East Tennessee State University. It will follow the transformation from the previous traditional model of instruction to the present model that incorporates online training and testing. It will focus on the problems with the previous model, the need for a new method of instruction, the implementation of the new method, problems encountered with the new method and future plans.

Case Study: Using Information Technology at ETSU

Kellie W. Price

This is a case study of the development of the Using Information Technology computer literacy course at East Tennessee State University. It will follow the transformation from the previous traditional model of instruction to the present model that incorporates online training and testing. It will focus on the problems with the previous model, the need for a new method of instruction, the implementation of the new method, problems encountered with the new method and future plans.

Model 1: Traditional Teaching Methods

In 1995, the General Education Core at ETSU was changed. One of the changes was that every student in the University would be required to take the CSCI-1100 Using Information Technology course prior to completing 33 credit hours at ETSU. This requirement resulted in an increase in student enrollment in CSCI-1100. Our enrollment has steadily increased since that time to approximately 1400 students during the Fall 1999 Semester.

Since it was a two credit hour course, the students were required to attend a two-hour lecture and one-hour lab each week for ten weeks. The lecture sections had approximately 240 students per section. The lab sections had approximately 30 students per section. The computer concepts portion of the course was covered in the weekly lectures, presented using PowerPoint presentations and software demonstrations. The hands-on portion was the lab hour in which students learned to use a word-processor, Internet and e-mail.

Need for change

With increasing enrollment, it became very hard to ensure that every student was getting the hands-on experience that the course was intended to offer. The lectures were also becoming increasingly inadequate in teaching students computer concepts. The lab sessions were spent leading students through a series of steps teaching them how to use a word processor. With 30 students and one instructor, this model was not very efficient.

Upon evaluation of the current method of teaching, the department realized a need for change. The purpose of the course is to teach students how to *use* information technology. In order to stress the *use* of the computer, we needed more effective hands-on instruction and a different method for teaching the lecture material. Another factor considered was the number of students who entered ETSU with enough computer knowledge to test out of the course.

Model 2: Self-Paced Online Instruction

The result of the course evaluation and changes was a new model that was intended to accommodate every student, regardless of their previous computer experience.

Course Description

CSCI-1100 now meets one hour a week for 15 weeks. Each section has a maximum of 30 students and meets **only** in the lab environment. It is now being offered as a partial distance education course, which means that the other hour of instruction (lecture portion) is received online outside of class.

Most of the instruction is through online training packages, including NetG's SkillVantage and Asymetrix Librarian. Both packages have testing software that allows for the tests to be taken online in the classroom.

Through SkillVantage the students learn how to use Microsoft Word. They are required to complete four different units in the Microsoft Word 97 Proficient User Module. Each unit has both interactive training and testing. The students are encouraged to go through the training at least once. They can go through it as many times as they need to and have the option to go through the complete unit or just certain topics that they need extra work on. Once they have completed the training, they are encouraged to practice the test at the end of the unit. This is the same test that they would take when they come to class on test day. SkillVantage randomly generates the questions so they will see different questions each time that they attempt the test. Upon completing the test, SkillVantage will help them to recognize the areas in which they need more practice. Students who take advantage of this feature have a better understanding of the subject matter and consequently score higher on the tests. Students have access to all of the SkillVantage tests throughout the entire semester.

Librarian is used to teach computer concepts through online books. The books that we present to the students in Librarian were created jointly by an Instructor and a Graduate Assistant in the Computer Science Department. The content of each book focuses on different computer concepts. Topics include, but are not limited to: an overview of the computer and how it works; computer terminology; the Internet and how it works; e-mail and how it works; WWW; computer viruses, security and ethics. Each book has a corresponding quiz that the students can practice repeatedly. The quiz has questions similar to those that they would see on the Librarian portion of the test.

Class time is used for both instruction and testing. The current format allows each student two attempts to take each test. The weeks in which no tests are given are used to teach students how to use their campus e-mail account, search online information resources (such as the Internet and ETSU's online

library catalogs) and other topics of interest.

Four tests are given throughout the semester. Each test is comprised of: 1) word-processing portion - given in SkillVantage; 2) computer concepts portion - given in Librarian; 3) application portion - having students perform such tasks as sending e-mail or searching an online information resource for information on a particular topic.

A website has been setup for the course. It includes course information such as the syllabus, policies, office hours, and a list of instructors and their e-mail addresses. It also includes links to SkillVantage and Librarian. Other resources include links to popular Internet search engines, ETSU's library databases, and the ETSU homepage. This offers students a central place where all resources needed for this course can be found.

An office has been setup specifically for this course. The UIT Office is open 5 days a week approximately 8 hours a day. Students can go to the office for individualized help or to take tests if they are testing out early or need special accommodations during a test. The UIT office can also help students with account management if they have forgotten their user-id or password. All instructors for the CSCI-1100 course spend their office hours in this office.

Model 2: Evaluation

After having the new model in place for several semesters, we were able to look back and evaluate both the advantages and disadvantages of the new model and identify any major problems. Both the advantages and disadvantages are discussed below. While it may appear otherwise initially, the advantages have greatly outweighed the disadvantages in this new model. We will build upon the positive aspects and make adjustments as necessary to keep improving the course in the future.

Advantages

The fact that all of our training is internet-based has proven to be the biggest advantage. Students have the convenience of accessing the training and tests from their own computer rather than having to sit for hours in one of the campus labs.

Allowing access to the tests so students can practice them multiple times has also proven to be a big advantage. The students who practice the test more than once score significantly higher on the tests. However, not all students take advantage of this opportunity.

With the new setup, students can advance through the course at their own pace. Students who are familiar with all or most of the material taught in the course may choose to complete the course as quickly as possible. This frees up class time for the instructor to spend with those students who need more help in grasping the concepts being taught.

This setup has also helped the process in which we allow students to take a proficiency test to opt out of taking the course. We can create the accounts they need, point them to the website, show them how to practice and allow them to come back when they are ready to take the test. By using the SkillVantage and Librarian tests, we take advantage of the automatic grading. Students also like this because they can spend as little or as much time as necessary in order to feel assured that they will pass the exam.

Disadvantages/Problems

This new model has proven more effective than the previous model of instruction. However, there are still some problems. No single model can fit the learning style of all students.

While the changes implemented were intended to accommodate the learning styles and abilities of all students, there have been a few exceptions. This format is excellent for the student with prior computer

knowledge and experience. It even works well for many students with little or no previous computer experience. The students for whom this model seems difficult are those students who have *never* used a computer and are very apprehensive about learning how to use one. A lot of our "non-traditional adult" students fall into this category. The first few weeks are used for account creation and familiarizing the students with the training packages. This tends to be very overwhelming for the student who has never touched a computer before. This can be very discouraging to a student who knows that they have to successfully complete this course in order to graduate.

Account management has also been a disadvantage in this new setup. Students are required to have four different computer accounts for this course: a SkillVantage account, a Librarian account, an e-mail account and an NT account for access to the campus computers. Management of all of these accounts is not an easy task. Our department manages the first two accounts, while the Office of Information Technology on campus manages the other two. Students have a hard time keeping up with four different accounts, despite efforts by the instructors to set them all up with the exact same user-id and password.

It has also been confusing to the students to use one training package for word-processing and a different package for computer concepts in general. Each test requires access to both accounts.

There were technical problems as well. With the large number of students that could be accessing the system at once, system response was slow at times and sometimes unresponsive. Problems were encountered several times when a classroom of students accessed the Librarian accounts all at once.

Another problem that we faced was the fact that the training for Microsoft Word is actually simulated rather than in the application. This has caused minor problems in that students may know multiple ways to perform a task in Microsoft Word, but there is only one correct answer on the test. This is more of a problem for students who already have word-processing experience.

The Future of UIT at ETSU

Because of the confusion of having two different training packages, we made the decision for Spring 2000 to consolidate the training by using the SkillVantage software for both areas: word-processing and computer concepts. Students now only have to access SkillVantage for all of the online training and now only have to keep track of three accounts. We will evaluate the effectiveness of this change at the end of the semester to determine if we want to continue with this method.

In order to accommodate the non-traditional adult students and those students who need more in-class contact with an instructor, we are experimenting with a new model. For Spring 2000, we are offering a special section of CSCI-1100. Students must be permitted to enroll in the section in order to ensure that there are enough seats for the students who really need it. It meets twice a week for an hour at a time. This section also has two instructors. These two things together benefit the students by offering more individualized attention. Based on the success of the section thus far and feedback from students and advisors, we are offering two of these special sections for Fall 2000.

We are currently developing another special section of the course which will be a strictly "distance education" course. In response to increasing requests by students to take this course without attending class, we are developing a section that will be taught completely online. It will require that students only make one or two trips to campus to take a midterm and a final. Projects will be submitted online through e-mail communication. We do not plan to teach all sections of the course this way.

Conclusion

While there are still some changes to be made, we feel that we have made great strides towards improving this course. The main purpose is to teach students how to use information technology so that

they can use the knowledge as they progress through their university curriculum.

Title: "Honors Tech: Integration of Web Technology in an Introductory Biology Honors Course

Authors: Sarah F. Barlow
Professor
Department of Biology

Brenda L. Kerr
Instructional Technology Specialist
Office of Information Technology

Middle Tennessee State University
Murfreesboro, Tennessee 37133

Abstract
Incorporating internet technology in a course brings a world of opportunities and knowledge to students. Researching topics for individual and group projects, utilizing ListServs as discussion groups, submitting assignments electronically, and developing a course webpage are activities which expand the realm of the classroom. This project involves collaboration between faculty and technology specialist in the development of internet opportunities for students in an Honors Biology course.

Topics in Biology (Biology 100H) is a general education course (4 semester hours) with both lecture and laboratory components in which the general principles of biology are explored. Specific goals of the course include creating awareness of the scope of science, of contemporary areas of research, and of the historical development of present scientific knowledge; developing a realization of the usefulness and the limitations of the scientific method and attitude as they relate to both the scientist and to the everyday of life of the student; and guiding students toward lifelong interest and learning in science. Opportunities and experiences afforded students through Biology 100(Honors) are extensive hands-on investigative laboratory experiences; close interaction with faculty; field trips; biological investigations beyond the laboratory; collaborative projects; interaction with experts in selected areas of biology; technology-enhanced instruction; and computer programs for enrichment, review, and project development.

Instructional technology provides diverse opportunities to enhance the learning experience. With higher education becoming student-centered rather than teacher-centered, this is an extraordinary era in which to teach. Instructional technology supports this transition to student-centered learning. IT materials for the honors biology course have been developed and implemented to support and enhance the curriculum and to maximize instructional effectiveness.

Educational objectives for implementation of web technology in the course are:
(1) to facilitate learning of biological concepts, (2) to facilitate student-instructor interaction, (3) to facilitate student interaction, (4) to facilitate communication and enhance communication skills, (5) to promote research and enhance research skills, (6) to promote and enhance the development of computer skills in communication and research, (7) to enhance presentation skills, and (8) to develop a sense of community among students.

Ability to evaluate and utilize web sites as research sources becomes as important as traditional library research skills. Skills developed may be used throughout a lifetime. To develop internet assignments, activities, and projects for students, the faculty member conducted a search for websites which can serve as resources for assignments; developed assignments for student research in genetic technology, social issues related to biological advancements, and ecological issues; and established ListServs for student interaction and discussion of biological topics. The internet also provides a convenient means of communication for students and faculty and promotes student/faculty interaction.

Web technologies which are integrated and utilized throughout the honors sections of this introductory biology course include email, listservs, and webpages. Email provides means for conducting general communication, posting assignments by instructor, submitting assignments by students, filing student-reported absences, accessing missed assignments in a timely fashion, and seeking assistance. Electronic communication provides opportunity for student collaboration in completing group projects. Intraclass and interclass listservs are used for discussion, announcements, and special assignments. Webpages developed by the instructor provide access to general course information, course syllabus, topic outlines and visuals, assignments, and group projects

(<http://www.mtsu.edu/~biol/honors/biology.html>). Webpages developed by graduate students under the direction of the faculty member present reviews of laboratory experiments and instructional materials (http://www.mtsu.edu/~biol/bio100/review.html). Class presentations of topic outlines presented at website http://www.mtsu.edu/~sbarlow/class_pres.html provide teaching and learning modules for major concepts in biology.

Students in the course are required to communicate through email, subscribe to and participate in ListServs, submit assignments electronically, research information on the web, and participate in the development of a web project which utilizes PowerPoint, visuals, audio, and external links.

To promote student access to technology resources: (1) choose technologies that are inexpensive, readily available, and easily learned; (2) provide a list of software and hardware available to students; (3) use listserv and bulletin board for whole class communication; (4) prepare web-based and handout-based instructions for software; (5) set aside class or lab time to introduce students to new software; (6) provide examples of finished projects; (7) provide subject-specific resource lists via handouts and the web; and (8) provide a means to easily track new resources that students find.

From the time of the first implementation of instructional technology in the course, an improvement in student attitude toward the course has been identified. Excitement in student faces was observed when an announcement of group web projects was made. Students have expressed gratitude for the interactive nature of this biology course with opportunities for development and use of technology. Even though a scientific study of student performance has not been conducted, recent improvement in student test scores has occurred.

Results of observational and anecdotal evaluation in this course show that instructional technology broadens student access to information, expands exposure to subject matter, promotes positive attitude toward course work, promotes interest in subject matter, enhances understanding of subject matter, improves performance on tests and assignments, promotes student interaction, enhances student-teacher interaction, promotes learning in collaborative experiences, enhances problem-solving skills, enhances presentation skills, and extends learning beyond the classroom. Evaluation results serve as direct input in making curricular decisions.

Use of computer-assisted-learning strategies and IT materials expand the realm of the biology classroom extending learning beyond the walls of the traditional classroom and laboratory. Future use of instructional technology in the course will include expansion of student involvement in the development and use of IT. Continued pursuit of computer-assisted learning strategies will enhance instructor's knowledge of technology opportunities for teaching and learning.

Self-Pacing Online Technology Approach: The Preservice Teacher Course

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Preparing the Preservice Teacher to Use Technology in the Classroom

One of the major problems facing teachers in K – 12 classrooms today is finding enough time to teach students who have an ever-widening range of academic abilities. In addition, with the recent nationwide accountability movement, classroom teachers are under increasing pressure to identify the academic level of their students and then to help them reach their full potential. By designing preservice technology courses that model instructional strategies and that enable students to work at their own pace, teacher educators are providing a method for students to use while learning that they can apply in their own classrooms. Due to work, family responsibilities, and scheduling conflicts, many pre-service university students need the flexibility of taking courses "online." This online technology course meets the needs of many pre-service teachers and models techniques than can be applied in their K-12 classrooms.

Self-Pacing OnLine Technology Approach

In the "teacher-in-training" technology courses offered by the Department of Educational Leadership at Middle Tennessee State University, web-based instruction has successfully assisted the process of training preservice students for the challenge of the academically diverse classroom. By facilitating instruction in a way that mirrors the self-pacing so desperately needed to meet the needs of students within a classroom, the preservice course enables students to work at their own pace. They begin at their individual level of technological literacy and moving forward. The course—designed to train the preservice student, as well as, the practicing teacher—utilizes the Internet in order to help students integrate technology into lesson plans and units of instruction. Over the past five years, we have experimented in our *SPSE 322 – Technology in Teaching* course with how to vary the rate of instruction in order to produce the highest rate of learning for all students in the academically diverse groups of future teachers. The course is offered by two different methods:

1. Online class with no scheduled classes except a performance review at the end of the semester to verify that the student actually did the work contained in their portfolio.
2. Regularly scheduled classes that meet in the Technology Lab

In order to allow self-pacing, we have facilitated the Sanders Self-Pacing OnLine Model for Classrooms with Varying Student Abilities. Components of the online model include:

1. *Web-based Materials* – Using web-based instructional materials with two different delivery methods which include non-scheduled instruction which allows students to work on their own using website instructions and e-mail, or occasionally attend scheduled classes for help in the completion of assignments.

2. *Criterion-Based Assessment System* – Employing a criterion-based assessment system, which enables students to submit materials via e-mail, which is then examined by the instructor. This process also provides an opportunity for the instructor to offer suggestions on how to professionally complete assignments and meet mastery learning objectives. There are 10 assignments (portfolio sections – see on website listed at the end of this document).

3. *Reflective Feedback* – Utilizing the process of reflective feedback as students complete each section of their "portfolio" which allows students to rethink, rework, and resubmit each section in order to reach an acceptable or mastery level. In addition, the process provides additional practice on computers and reinforces specific concepts and technological skills.

4. *Pacing* – Encouraging students to work at their own pace—even if this means working ahead of the suggested schedule. A schedule of due dates is posted on the Internet site. The assignments can be submitted in any order.

5. *Peer Sharing and Conferencing* – Providing opportunities for students to share and conferencing about projects and products. A list of the students' email addresses is sent to each student. The instructor matches students with expertise with students who need assistance in completing a particular Portfolio Section. By encouraging peer sharing and conferencing, the course provides a means for scaffolding with another, more capable person—which is the type of assisted, social learning based on the work of Vygotsky and suggested by Dixon-Krauss (1996).

6. *Alternate Computer Stations* – Empowering students by enabling them to work at off-site computer stations—within the home, computer lab, or library—in order to provide the best possible situation that will foster technological literacy while addressing learning styles and individual pacing.

In addition, a course website is used (http://www.mtsu.edu/~jsanders). The site assists the instructors in:

- Providing examples of each project and assignment
- Developing a course calendar for scheduling specified times for in-class instruction as well as due dates for projects
- Enabling students to view course materials from alternate computer stations
- Making available animated PowerPoint presentations which are utilized throughout in-class instruction, as well as, at alternate computer sites

The outcome of the course is a professional technology portfolio, upon which the final grade is based. The technology portfolio becomes part of the larger professional portfolio, which is required to complete the student teaching experience.

Performance and Effects of Self-Pacing

Through the five years that the course has been offered, instructors have kept field journals and completed informal reflections on observations as students engage in computer-assisted activities, complete assignments, and conference with peers. Using the three types of learner groups mentioned above, the following recorded observations are offered for teacher educators in Table 1.

Table 1.

Recorded Reflections of OnLine Self-Pacing Student Actions

Group 1 – Advanced Computer User/Fast-Paced Learner (10 to 15%)
Require little or no additional instruction
Usually work ahead of schedule using the website for reference and instruction

Submit assignments on time or ahead of schedule

Group 2 – Intermediate Computer User/Average-Paced Learner (70 to 80%)
Gain knowledge from information on the website, from the instructor, or each other.
Require little assistance from instructor
Submit assignments on time

Group 3 – Beginner Computer User/Slow-Paced Learner (10 to 15%)
Require substantial online and personal assistance from the instructor
Receive assistance from peers – usually the Average-Paced Learners
Submit assignments varying from "late" to "on time"

Note: A pre-registration screening process is used to discourage beginning computer users from taking this course in the online mode. Since their frustration level is very high and they can seldom complete the online course, they are referred to the regularly scheduled classes.

Reflections recorded by course instructors (Middle Tennessee State University *SPSE 322 – Technology in Teaching*) over a period of two years.

All three groups of learners generally meet the target due dates for each section of the technology portfolio. The advanced group/fast-paced learners usually turn in completed portfolios early—ranging from a few days early to several weeks before the semester ends. The intermediate group/average-paced learners, as well as, the beginner group/slow-paced learners submit completed technology portfolios usually on the last day of class. The overall quality and professional appearance is similar for all three groups. The use of creative images, animation, and additional features is scattered with no obvious pattern and seems to be based on the individual student's interest level rather than their pacing group.

Based on teacher observation and informal reflections, the apparent anxiety level, difficulty in asking questions, and increase in student confidence falls into the following general categories as shown in Table 2.

Table 2.

Anxiety Level With Regard to Difficulty in Asking Questions and Increase in Student Confidence

Group One – Advanced Computer User/Fast-Paced Learner
Anxiety level increases slightly or remains unchanged throughout the semester as assignments are completed. Confidence level increases throughout the semester

Group Two – Intermediate Computer User/Average-Paced Learner
Anxiety level is high at the beginning of the semester and decreases as assignments are completed. Confidence level increases at a constant rate throughout the semester

Group Three – Beginner Computer User/Slow-Paced Learner
Anxiety level is very high at the beginning and remains high through most of the semester before

decreasing some near the end of the semester. If they complete the course, their confidence increases very slowly at the beginning of the semester and then increases dramatically as the semester draws to a close. (See Note above)

Reflections recorded by course instructors (Middle Tennessee State University *SPSE 322 – Technology in Teaching*) over a period of two years.

In general, the self-pacing approach has been successful and appears to work well for all three groups of students. The end products—student knowledge gain, technological literacy, and computer skills—are evenly distributed across all three levels of learners. The big difference between this approach and a more traditional approach to technology instruction where a strict schedule for submitting assignments is adhered to is that the amount of assistance and time the instructor is able to provide each student can be altered to meet the needs of individual learners.

Online Classes

We have offered this course in an online (Internet-based) mode for 3 semesters. The students work on their own from remote locations. They follow the instructions found on the Internet Site: http://www.mtsu.edu/~jsanders/322-on.htm and attach the portfolio section files to their emails to the instructor. The instructor critiques each assignment and makes appropriate comments or suggestions for the student to follow. The assignment can be resubmitted as many times as necessary to get it to a "professionally accepted standard." The following is a list of the positive and negative aspects of this method:

- **Previous computer experience** – we have found that the instructor must carefully screen the students to determine if they have sufficient computer skills to be able to handle the online mode. Even after screening some of the students lack the computer skills to be able to effectively process the workload. Five to ten percent of online students come to the regularly scheduled classes or to the instructor's office for extra help.
- **Lack of Self Motivation** – A small percentage of the online students do not have the self discipline to get the assignments completed and submitted by the due dates. The students can submit the Portfolio Sections in any order as long as they submit a section for each due date. If a student falls behind schedule, the instructor reminds them of the importance of setting priorities and staying on schedule. If they cannot keep up, then it is suggested that they switch to the regularly scheduled classes.
- **Who's Doing the Work**? – There is always the question "is the student actually doing the work" without too much help that might hinder them from gaining the desired knowledge and skills. We have a scheduled 2-hour Performance Review at the end of the semester to verify that the student has mastered the basic skills & knowledge. We use 3 short assignments and if the student does not demonstrate proficiency, then they do not pass the course. Assuming that they pass the Performance Review, then their grade is based on the completed, bound portfolio that is kept by the instructor.
- **What do they miss**? The online student misses the modeling of the use of technology in the classroom. However, our courses are sequenced so that they are exposed this in other courses where they have to use technology to present their lesson to their peers.
- **Chat Room or Buddy System Needed** – A survey of the previous online classes revealed that they need to be able to ask for help at times when the instructor is not online. We will be starting a Chat Room, Listserv, and/or a Buddy System to help provide that assistance. Presently, in addition to the instructors assistance, we refer one student who needs help to another student who is very proficient in their particular area. This has worked well, but apparently does not fill the void for some students.
- **Online Mode Meets Student Needs** – The online mode has been successful because it meets the

needs of students who have scheduling or time conflicts. It also promotes planning and self-motivation which are skills that the preservice or new teacher need to be able to survive their first classroom experience.

Reflections and Summary

If teacher educators must assist preservice students in becoming technologically literate, they must design technology courses that enable students to become skilled at integrating technological applications into instruction, as well, as allowing for individual student differences. The "online" method described and the reflections provided are just one way instructors have successfully assisted students in creating a professional technology portfolio as they develop the skills needed for the classroom. As part of the president's educational technology initiative, a challenge for all students to become technologically literate was issued to America. The challenge falls directly on teacher educators who have the opportunity to provide modeled instructional practices that integrate technology into the curriculum and that enable all students to work at their own pace in becoming technologically literate. By seeking successful practices, such as, the one described, we can facilitate learning while fostering the level of technological literacy needed by future teachers.

References

Craig, D.V. (1997). When the learner is in charge: Technological literacy patterns in student generated inquiry projects for fifth graders. Dissertation Abstracts International, D-1341.

Dixon-Krauss, L. (1996). Vygotsky in the classroom: Mediated literacy instruction and assessment. White Plains: Longman Publishers.

Teachers and technology: making the connection. OTA report summary. (1995). Washington DC: U.S. Government Printing Office.

Additional Resource

Technology in the Classroom –SPSE 322 website URL:

- Click http://www.mtsu.edu/jsanders and
- click "SPSE 322"(http://www.mtsu.edu/~jsanders/322.htm) for regular class and
- click "322 OnLine" (http://www.mtsu.edu/~jsanders/322-on.htm) for the online class.

Self-Pacing Technology Approach: The Preservice Teacher Course
Online & Regularly Scheduled Classes

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Preparing the Preservice Teacher for the Classroom

One of the major problems facing teachers in K – 12 classrooms today is finding enough time to teach students who have an ever-widening range of academic abilities. In addition, with the recent nationwide accountability movement by state boards of education, classroom teachers are under increasing pressure to identify the academic level of their students and then to help them reach their full potential. Although these goals are worthy, it gets increasingly more difficult for teachers to help every student meet their individual learning needs. However, in many classroom situations, teachers to meet the needs of an

academically diverse student body are utilizing technology and technological applications. Among technological applications available to classroom teachers are the Internet-connected computer, networked computer labs, Internet-based courses, and the world wide web—all of which assist in individualizing educational experiences (ERIC doc. 94-6, 1999).

By designing preservice technology courses that model instructional strategies and that enable students to work at their own pace, teacher educators are providing a method for students to use while learning that they can apply in their own classrooms.

Self-Pacing Technology Approach

In the "teacher-in-training" technology courses offered by the Department of Educational Leadership at Middle Tennessee State University, web-based instruction has successfully assisted the process of training preservice students for the challenge of the academically diverse classroom. By facilitating instruction in a way that mirrors the self-pacing so desperately needed to meet the needs of students within a classroom, the preservice course enables students to work at their own pace. They begin at their individual level of technological literacy and moving forward. The course—designed to train the preservice student, as well as, the practicing teacher—utilizes the Internet in order to help students integrate technology into lesson plans and units of instruction. Over the past five years, we have experimented in our *SPSE 322 – Technology in Teaching* course with how to vary the rate of instruction in order to produce the highest rate of learning for all student in the academically diverse groups of future teachers. Not suprisingly each semester, students enrolled in the technology classes are similar to what can be found in the typical public school classroom. The preservice students can usually be categorized into three distinct learning groups with regard to technological literacy levels and pacing:

a) beginners who typically move at a slow pace,
b) intermediate students who move at a moderate pace when completing assignments,
c) advanced users who usually progress forward at a relatively fast pace.

The beginners and the advanced users are usually the smallest in number with each group representing approximately 10 – 15% of each class population.

The course is offered by two different methods:

1. Regularly scheduled classes that meet in the Technology Lab
2. Online class with no scheduled classes except a performance review at the end of the semester to verify that the student actually did the work contained in their portfolio.

In order to allow self-pacing, we have facilitated the Sanders Self-Pacing Model for Classrooms with Varying Student Abilities. Components of the model include:

1. *Web-based Materials* – Using web-based instructional materials with two different delivery methods which include scheduled in-class instruction time for completion of assignments and instructor assistance, and non-scheduled instruction which allows students to work on their own using website instructions and e-mail.

2. *Criterion-Based Assessment System* – Employing a criterion-based assessment system, which enables students to submit materials in printed form or via e-mail, which is then examined by the instructor. This process also provides an opportunity for the instructor to offer suggestions on how to professionally complete assignments and meet mastery learning objectives.

3. *Reflective Feedback* – Utilizing the process of reflective feedback as students complete each section of their "portfolio" which allows students to rethink, rework, and resubmit each section in order to reach an acceptable or mastery level. In addition, the process provides additional practice on computers and reinforces specific concepts and technological skills.

4. *Pacing* – Encouraging students to work at their own pace—even if this means working ahead of the suggested schedule.

5. *Peer Sharing and Conferencing* – Providing opportunities for students to share and conferencing about projects and products. By encouraging peer sharing and conferencing, the course provides a means for scaffolding with another, more capable person—which is the type of assisted, social learning based on the work of Vygotsky and suggested by Dixon-Krauss (1996).

6. *Alternate Computer Stations* – Empowering students by enabling them to work at off-site computer stations—within the home, computer lab, or library—in order to provide the best possible situation that will foster technological literacy while addressing learning styles and individual pacing.

In addition, a course website is used (http://www.mtsu.edu/~jsanders). The site assists the instructors in:

- Providing examples of each project and assignment
- Developing a course calendar for scheduling specified times for in-class instruction as well as due dates for projects
- Enabling students to view course materials from alternate computer stations
- Making available animated PowerPoint presentations which are utilized throughout in-class instruction, as well as, at alternate computer sites

The outcome of the course is a professional technology portfolio, upon which the final grade is based. The technology portfolio becomes part of the larger professional portfolio, which is required to complete the student teaching experience.

Performance and Effects of Self-Pacing

Through the five years that the course has been offered, instructors have kept field journals and completed informal reflections on observations as students engage in computer-assisted activities, complete assignments, and conference with peers. Using the three types of learner groups mentioned above, the following recorded observations are offered for teacher educators in Table 1.

Table 1.

Recorded Reflections of Self-Pacing During In-Class Computer Sessions

Group 1 – Advanced Computer User/Fast-Paced Learner (10 to 15%)
Require little or no instruction
Usually work ahead of schedule using the website for reference and instruction
Readily assists and frequently conference with other students around them
Submit assignments on time or ahead of schedule

Group 2 – Intermediate Computer User/Average-Paced Learner(70 to 80%)
Gain knowledge from in-class instruction, information on the website, each other, or notes
Require little assistance from instructor after in-class instruction sessions
Actively help others
Submit assignments on time

Group 3 – Beginner Computer User/Slow-Paced Learner (10 to 15%)
Must listen carefully during in-class instruction sessions
Require substantial assistance from the instructor
Receive substantial assistance from peers – usually the Average-Paced Learners
Take limited amount of notes, which appear to be of little value
Submit assignments varying from "late" to "on time"

Reflections recorded by course instructors (Middle Tennessee State University *SPSE 322 – Technology in Teaching*) over a period of five years.

During the semester, the class is structured into:

a) one-third "in-class instruction mode," and

b) b) two-thirds "lab mode."

Typically 90 – 95% of the instructor's time is spent assisting the slow-paced learners who make up approximately 10 – 15% of the each class. With extra instruction provided by the instructor and more capable peers, the beginning computer user (slow-paced learner) usually struggles to keep up with assignments and projects. However, most complete the course and submit a professionally designed technology portfolio. The drop-rate for the course is less than 5% and usually occurs within the first two weeks of the semester.

Throughout the early part of the semester, the class sessions are very structured, but transitions into a very unstructured environment as students become comfortable working on the computers and conferencing with each other. Similar to previous research findings (Craig, 1997), the male students share ideas in a very loose, unorganized manner—beginning early on and continuing throughout the semester. The female students, however, tend to write down problems and solutions and are more apt to share suggestions slowly as work progresses.

All three groups of learners generally meet the target due dates for each section of the technology portfolio. The advanced group/fast-paced learners usually turn in completed portfolios early—ranging from a few days early to several weeks before the semester ends. The intermediate group/average-paced learners, as well as, the beginner group/slow-paced learners submit completed technology portfolios usually on the last day of class. The overall quality and professional appearance is similar for all three groups. The use of creative images, animation, and additional features is scattered with no obvious pattern and seems to be based on the individual student's interest level rather than their pacing group.

Based on teacher observation and informal reflections, the apparent anxiety level, difficulty in asking questions, and increase in student confidence falls into the following general categories as shown in Table 2.

Table 2.

Anxiety Level With Regard to Difficulty in Asking Questions and Increase in Student Confidence

Group One – Advanced Computer User/Fast-Paced Learner

Anxiety level increases slightly or remains unchanged throughout the semester as assignments are completed. Confidence level increases throughout the semester

Group Two – Intermediate Computer User/Average-Paced Learner

Anxiety level is high at the beginning of the semester and decreases as assignments are completed.

Confidence level increases at a constant rate throughout the semester

Group Three – Beginner Computer User/Slow-Paced Learner

Anxiety level is very high at the beginning and remains high through most of the semester before decreasing rapidly near the end of the semester. Confidence increases very slowly at the beginning of the semester and then increases dramatically as the semester draws to a close.

Reflections recorded by course instructors (Middle Tennessee State University *SPSE 322 – Technology in Teaching*) over a period of five years.

In general, the self-pacing approach has been successful and appears to work well for all three groups of

students. The end products—student knowledge gain, technological literacy, and computer skills—are evenly distributed across all three levels of learners. The big difference between this approach and a more traditional approach to technology instruction where a strict schedule for submitting assignments is adhered to is that the amount of assistance and time the instructor is able to provide each student can be altered to meet the needs of individual learners.

Online Classes

We have offered this course in an online (Internet-based) mode for 3 semesters. The students work on their own from remote locations. They follow the instructions found on the Internet Site: http://www.mtsu.edu/~jsanders/322-on.htm and attach the portfolio section files to their emails to the instructor. The instructor critiques each assignment and makes appropriate comments or suggestions for the student to follow. The assignment can be resubmitted as many times as necessary to get it to a "professionally accepted standard." The following is a list of the positive and negative aspects of this method:

- **Previous computer experience** – we have found that the instructor must carefully screen the students to determine if they have sufficient computer skills to be able to handle the online mode. Even after screening some of the students lack the computer skills to be able to effectively process the workload. Five to ten percent of online students come to the regularly scheduled classes or to the instructor's office for extra help.
- **Lack of Self Motivation** – A small percentage of the online students do not have the self discipline to get the assignments completed and submitted by the due dates. The students can submit the Portfolio Sections in any order as long as they submit a section for each due date. If a student falls behind schedule, the instructor reminds them of the importance of setting priorities and staying on schedule. If they cannot keep up, then it is suggested that they switch to the regularly scheduled classes.
- **Who's Doing the Work**? – There is always the question is the student actually doing the work without too much help that might hinder them from gaining the desired knowledge and skills. We have a scheduled 2-hour Performance Review at the end of the semester to verify that the student has mastered the basic skills & knowledge. We use 3 short assignments and if the student does not demonstrate proficiency, then they do not pass the course. Assuming that they pass the Performance Review, then their grade is based on the completed, bound portfolio that is kept by the instructor.
- **What do they miss**? The online student certainly misses the modeling of the use of technology in the classroom. However, our courses are sequenced so that they are exposed this in other courses where they have to use technology to present their lesson to their peers.
- **Chat Room or Buddy System Needed** – A survey of the previous online classes revealed that they need to be able to ask for help at times when the instructor is not online. We will be starting aChat Room, Listserv, and/or a Buddy System to help provide that assistance. Presently, we refer one student who needs help to another student who is very proficient in their particular area. This has worked well, but apparently does not fill the void for some students.
- **Online Mode Meets Student Needs** – The online mode has been successful because it meets the needs of students who have scheduling or time conflicts. It also promotes planning and self-motivation which are skills that the preservice or new teacher need to be able to survive their first classroom experience.

Reflections and Summary

If teacher educators must assist preservice students in becoming technologically literate, they must design technology courses that enable students to become skilled at integrating technological applications into instruction, as well, as allowing for individual student differences. The method described and the reflections provided are just one way instructors have successfully assisted students in creating a professional technology portfolio as they develop the skills needed for the classroom. As part of the president's educational technology initiative, a challenge for all students to become technologically literate was issued to America. The challenge falls directly on teacher educators who have the opportunity to provide modeled instructional practices that integrate technology into the curriculum and that enable all students to work at their own pace in becoming technologically literate. By seeking out successful practices, such as, the one described, we can facilitate learning while fostering the level of technological literacy needed by future teachers.

References

Craig, D.V. (1997). When the learner is in charge: Technological literacy patterns in student generated inquiry projects for fifth graders. Dissertation Abstracts International, D-1341.

Dixon-Krauss, L. (1996). Vygotsky in the classroom: Mediated literacy instruction and assessment. White Plains: Longman Publishers.

Infusing technology into preservice teacher education. (1999). ERIC Document #94-6. [Online] Available: http://www.ericsp.org/news3.html

Teachers and technology: making the connection. OTA report summary. (1995). Washington DC: U.S. Government Printing Office.

Additional Resource

Technology in the Classroom –SPSE 322 website URL:

- Click http://www.mtsu.edu/jsanders and
- click "SPSE 322"(http://www.mtsu.edu/~jsanders/322.htm) for regular class and
- click "322 OnLine" (http://www.mtsu.edu/~jsanders/322-on.htm) for the online class.

TIMESAVING TIPS FOR INFORMATION GATHERING

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Abstract

The explosion of electronic information sources and the frequent changes in search interfaces and technology make it difficult for users to keep current in the innovative ways they can make use of library resources for research and teaching. This paper, presented in three parts, first provides practical, timesaving tips for locating useful information in library databases. Next is a discussion of current awareness services, which automatically notify users of the latest information on their topic(s). Finally, bibliographic management software to import citations from databases for use in a bibliography is covered.

INTRODUCTION

Academic libraries are spending increasing portions of their budgets on electronic information sources and the associated technologies for access. Faculty and students need to be aware of how library technology can impact the way they use library resources for research and teaching. The explosion of the number of electronic information sources and the frequent changes in search interfaces and technology make it difficult for users to stay current in innovative ways to use these resources. A study of faculty responses to library technology made by Starkweather and Wallin found that the concept of convenience was mentioned often. Services that saved faculty time and allowed for asynchronous transactions from remote locations were considered valuable and convenient, but the transition process and learning new technologies were considered inconvenient. (Starkweather)

This paper will provide some practical, timesaving tips for making the most of some innovations to help make the transition process easier. The first section will give a variety of techniques for effective and efficient use of some of the popular bibliographic databases. The second section will focus on the use of current awareness services as a means of learning about new articles being published. The third section will describe the use of bibliographic management software to save time and effort by importing citations from databases, library catalogs, and web sites into a user's own database for use as citations in papers and bibliographies.

PART ONE: TIPS FOR USE OF BIBLIOGRAPHIC DATABASES
Lynn Flanagan

1. Read the Help screens for the specific database you are using.

Many database vendors provide access to several different databases using the same type of search interface. OCLC, SilverPlatter, InfoTrac, EBSCO, ProQuest and others offer several specialized databases in addition to a general index to periodical articles. The vendors often have general help screens which apply to the basic searches in all the databases. From these general help screens you should be able to learn such things as:

How does the search engine treat phrases? Is the default connector AND, OR, or is an exact phrase search performed?
What truncation symbols are used?
What different connectors, proximity operators, etc. are allowed and how are they used?

However, to make efficient use of a specific database, be sure to read the help screens for that particular database. Often subject-specific access points or searchable fields are described which will allow you to focus your search. These fields will vary according to the subject matter covered. Even within the single database Lexis-Nexis Academic Universe there are differences in the most effective way to search the news, legal, business, medical, and reference segments. Scroll down the screen to read the "Tips" information in each individual segment to find explanations of how to enter such special search criteria as legal citations, SIC codes, etc.

2. Make use of the different access points and the limit features for the specific database you are using in order to focus your results.

Most interfaces provide both basic and advanced search screens. Usually the basic interface allows only simple searches such as keyword, author, title, and perhaps subject. The advanced mode, on the other hand, provides more access points and allows for combinations of criteria. The advanced search mode should be used for complex research. For example, the Basic Search screen of ArticleFirst from OCLC's FirstSearch shows only one query box with a pull-down menu of eight searchable indexes and no limiting choices. The Advanced Search screen, on the other hand, shows four query boxes which can be combined with Boolean operators, plus it adds options of exact phrase searching to bring the number of indexes to twelve, and adds two limiting choices, thus allowing for much more focused search techniques.

The specialized subject databases from FirstSearch provide even greater flexibility. Chemical Abstracts Student Edition, for example, has twenty-two different access points including such special fields as CAS Registry Number, CAS Section Name or Number, and Chemical Substance Term. GeoRef has thirty-three different searchable fields including various latitude and longitude options, plus several Limits boxes including Document Type which offers eight choices. Similar flexibility is offered from the advanced search mode in other subject databases from FirstSearch and from other vendors such as The Gale Group (InfoTrac), SilverPlatter, WilsonWeb, ProQuest, EBSCO and others.

It is sometimes necessary to change the default display settings in order to view all the different access points or fields of information which are on a full record. Read the help screens to determine how to change the display options if it is not obvious on the screen.

It is very important to use the index and thesaurus when they are available. Browsing an author index, for example, may disclose that a person has used several different forms of their name. You must search for all the different forms in order to retrieve references to all the articles written by this person. Many databases use controlled vocabulary subject terms which are often based on Library of Congress Subject Headings or a specialized list of headings used for the particular subject matter such as the MESH headings in Medline. These subject terms are usually listed in a thesaurus. One good search strategy is to search first by one of the broad controlled vocabulary subject headings and then to limit the search to items which also contain one or more specific keywords or phrases somewhere in the record.

Use of the Limit Fields can help focus your results. The InfoTrac family of databases, for example, provides a limit box for refereed publications. Often students are confused about the difference in a scholarly and a popular publication and limiting the search to find only refereed publications helps them to retrieve only the more scholarly articles. Other limit fields include such items as publication date(s), language, publication or document type, journal title, and other subject-specific limiters.

The availability of many specialized access points allows users to become very specific in their search criteria. This is especially important in very large databases where unmanageable numbers of results can be retrieved, especially if broad topics are used simply as keyword search terms. For

example, using the SilverPlatter version of ERIC, one may perform the following search:

(inclusive-schools or mainstreaming) in DE AND
(hearing-impairments or deafness) in DE AND
(early-childhood-education or primary-education) in DE
with the Document Type limiter set to REPORTS-RESEARCH.

This search strategy will return only research reports in which the major concept is the mainstreaming of young children with hearing problems.

In any large full text database it is especially important to use as many ways as possible to focus your search and thus reduce the number of results. Even in Lexis-Nexis Academic Universe which has limited provisions for complex searching, results can be narrowed using some of the specialized techniques available. For example, in the News - General News segment you may type presidential candidate* in the keyword box and in the box to Narrow Search with Additional Terms add abortion and section(editorial), leave the source as Major Newspapers, and select the date range from the pull-down menus. This would find only editorials published during the chosen time period in major newspapers commenting on the statements and stands of the presidential candidates concerning abortion.

The flexibility provided by making use of the different access points in searching a database can also allow for really creative searches. For example, suppose you are a chemistry professor and while at a conference you meet someone who has done some research on ksp solubility. You remember that his first name is Roy, but that is all you know. Later you become interested in ksp solubility and would like to discuss it with Roy. Using Chemical Abstracts Student Edition, enter ksp solubility as a keyword (default) search and roy as an author keyword. You will find an article co-authored by Roy W. Clark of Middle Tennessee State University and thus can contact him if you wish.

3. Learn which indexes include your favorite journal titles.

As subject experts, most professors know specific journals which best cover their favorite topic(s). Most databases provide a searchable field where a journal title can be entered to determine if that title is included. However, it is usually more difficult to find a complete listing of all the titles covered. Most search screens do not have a link to a journal list nor do the help screens. WilsonWeb places an icon with a link to journal lists on the database selection screen, but not on the search screen. Lexis-Nexis Academic Universe is unusual in that it does have a link to all the sources in this huge database at the top of the search screen, plus a link to the sources included in each particular segment of the database beside the pull-down menu for Source on the search page.

Often one can go to the web page of the producer of the data or the vendor and find a link to the journal title lists. When you find such a list, it is a good practice to bookmark the link or put it on your web page. (See my list at <http://frank.mtsu.edu/~lflanaga/journallists.html >).

4. Determine how to locate an item.

Many database vendors provide an easy way to learn if your library owns a book or a subscription to the journal referenced in a citation. Some do this using a Holdings Utility program which allows library personnel to go through a list of journal titles included and "tag" those the library owns. The program then places an icon or a marker of some type on the record to indicate that the library owns the title. Other vendors provide a link from the record to the library's web-based online catalog. Clicking the link automatically enters the ISSN or ISBN in the catalog search window and the user can immediately determine if the item is available in the library. OCLC's FirstSearch databases check the OCLC holdings and display a written message.

If the item is not available in your library, some vendors provide a link to the Interlibrary Loan request forms of your library. Clicking the link enters all the bibliographic information into the form. All you have to do is add your personal information and send the request. It goes directly to the Interlibrary Loan personnel who can then process the request knowing that all the bibliographic information is entered correctly.

Some vendors also provide links to Document Delivery services, which allow you to order an online display, e-mail, fax, or mail delivery of a copy of the article and pay for it using your credit card.

5. Repeat a search.

There may be times when it is important to repeat exactly a complex search you have done in order to continue an interrupted session, show a fellow researcher or student the search strategy you used, or to re-run the same search in order to find recent references which have been added. Vendors handle this in various ways. SilverPlatter puts a "Save History" button on the screen. When it is clicked, you are asked to enter your e-mail address and the name you wish to give to the search to be saved. Later, when you open the same database, you can click on the "Load History" button, enter your e-mail address, and a list of all your saved search histories will display. You can then re-run them, edit them, etc.

The Gale Group's InfoTrac databases provide "InfoMarks," which are persistent URLs, at several points in a search process. The InfoMark icon appearing on a screen indicates that you can use your internet browser to bookmark that screen or copy the current URL and return to that same screen later.

6. Use the update codes.

The default sort setting for many databases makes the search results page display with either the most recent publication dates first or the most recent additions to the database first. However, if you wish to see only those references which were added since the last time the database was updated or since the last update that you checked, then make use of the update codes field available in most databases. In SilverPlatter databases, for example, you can enter your search query adding the update criteria in the format ud>YYYYMM for monthly or quarterly update schedules or ud>YYYYMMDD for more frequent updates.

7. Use Persistent Links.

As distance education and online course materials become more popular, professors face the challenge of how to abide by copyright restrictions and yet make information from copyrighted articles easily available to their students who are not on campus. If an article is simply copied on to a web page designed for use by students in a particular class, but that web page is available to anyone who happens to click on it, then the copyright restrictions are not followed. That can hardly be called "fair use." However, if access to the article or information is limited to only those persons who have a legal right to access the database because of their affiliation with a subscribing institution, then the restrictions are being followed.

Vendors who provide persistent links to the article level are making it possible for professors to provide fair use access to information from a copyrighted database. Using InfoTrac's InfoMarks, for example, you can incorporate a link to the full text of an article, to a bibliography which in turn may provide links to full-text articles, or to a search history which will rerun and update a specific search strategy. When someone clicks on these links on your web page, they will be allowed to view the information only if they are authorized users of that particular database. If they are registered as your students, then they should have access to the same online databases you have through the institution's library. This technology is particularly helpful and allows for really creative uses because you can incorporate the InfoMark URLs into your online syllabus, daily assignment sheets, or even into an e-mail to a student or fellow researcher to alert them to a particularly useful article. See the URL <http://frank.mtsu.edu/~lflanaga/infomarks.html>for some examples of uses of InfoMarks.

Lexis-Nexis Academic Universe does not provide persistent links to articles. However, Dr. Raleigh Muns at the University of Missouri - St. Louis has written a program which allows you to enter all the search criteria into his search window and save the URL which it creates. Then you can use that URL to open Academic Universe with your search criteria already entered. You can use this technology in much the same way as the InfoMarks with the extra step of executing the search. Go to <http://www.umsl.edu/~muns/au/ > to use this free service from Dr. Muns.

8. View the Table of Contents of a particular journal issue.

Many scholars view browsing as an important way to discover new information. Perhaps you enjoy browsing through the table of contents of every new issue of a favorite title. Or perhaps you learn that an older theme issue was published on a topic of interest and you want to be certain that you find bibliographic information on all the articles in that issue. Simply using a subject search query limited to the journal title and date of publication may not necessarily find them all. Even if you do not have access to a database of tables of contents, you can usually get it from an index database that includes that title.

Both WilsonWeb and InfoTrac interfaces make it easy if you find one article in the issue by adding a link to a list of all articles in that issue from a full record display. When you do not know of an article in the issue, most databases allow you to use the Advanced Search Mode and enter the journal name in one search box and the publication date of the particular issue in the second search box connected by AND. In InfoTrac if the journal field is not one of the indexes available in the drop-down menu of indexes, then it will be one of the limiting boxes listed below the regular query boxes. In this case, use only the publication date in the query box and the journal title in the limit box below. Each issue of Chemical Abstracts, even in the abridged Student Edition from OCLC, is much too large for browsing through a complete issue. However, you can further limit your search to a specific section, or broad topic, in the publication.

Many vendors are now providing mechanisms by which you can have the tables of contents of journals or even references to all articles on a subject from the database automatically sent to your e-mail address. That is the focus of the next part of this paper.

PART 2: CURRENT AWARENESS SERVICES

Karin Schreier Hallett

Introduction

Electronic databases have become essential research tools in academe. They are generally the first stop for information seekers. In recent years, user interfaces have greatly improved, usually moving from text-based versions to Web-based versions. User friendliness combined with accessibility from home or office adds to the utility of electronic databases. Compared to print indexes, electronic indexes are updated more frequently, allowing searches of multiple years of data in one step, rather than leafing through volume after volume of print. Also, electronic databases offer more flexible search options. A feature of growing importance in electronic databases is current awareness, sometimes also referred to as selective dissemination of information (SDI).

Due to the overpowering scope of electronic databases, users can be easily overwhelmed by the amount of information available. SDI provides a searcher with the ability to establish a profile for personal notification of newly added citations related to specific areas of interest. As such, it is a customized reference service, designed to keep researchers up to date on the progress within their specific fields. It may also be referred to as a personalized current awareness service, structuring information on behalf of end users. SDI grew out of the need to transmit ideas between researchers in the same or related disciplines (Fidoten, 6: 332). While the idea is not new, its nature and role have changed tremendously in recent years due to technological developments. Traditionally, librarians have scanned new items for content and matched the content with the information needs of their users. Online current awareness services, however, are more flexible than the traditional services, allowing users to create their own search profiles, and to print or download selected records. Also, services may be delivered via electronic mail or bulletin boards. Some services are made accessible by libraries and others are sold directly to the end user. Electronic current awareness services are no longer unique to proprietary databases but have spread to the Internet, providing real time information delivery. Following is a discussion of diverse, increasingly sophisticated, electronic current awareness services.

Current Awareness Services: Examples
Current awareness services are not a new idea. Traditionally, librarians have circulated bibliographic citations for newly acquired monographs or the tables of contents for recently received journals to academic departments. With the advent of electronic information retrieval, information seekers can now compile their own individual lists of recently published materials with the added benefit of greater search power offered by electronic databases.

Basic Services
The most basic current awareness services offer a save search facility, which stores profiles that can be re-run at a later date. This is a semi-automated service, with the request burden still on the user, however, who must execute the repeat search feature. Many different database vendors, including SilverPlatter offer these save search facilities and were described above.

A Table of Contents Service
A more sophisticated version of a current awareness service is one that automatically forwards the tables of contents of newly included journal titles to a specified email address. In order to receive the table of contents, a user typically selects from a list of journal titles. As soon as new issues are added to the database, a table of contents is generated and electronically mailed to the user.

One example is MCB University Press's E-mail Alert Service, provided through Emerald, the Electronic Management Research Library Database. The database is available through subscription only. Emerald indexes over 130 journal titles, covering an array of management-related areas, such as general management, engineering, human resources, marketing, training and education, and library and information services. The full-text of titles is available back to 1994 and abstracts are available back to 1989. To receive the service, you must register by providing your name, affiliation, and contact information, and then selecting from a list of journal titles. Once registered, you will be sent a confirmation message. The list of titles currently can not be modified electronically--although MCB is planning to have this option up and running "within the next few months," according to a representative. At this time, a registered user can change a title selection only by contacting an MCB representative.

You will receive the table of contents of selected titles as soon as they are added to the database. Alert Service messages provide brief article citations, including an "article type" description (book review, case study, comparative/evaluators, journalistic, literature review, survey, technical, theoretical with application in practice, theoretical with worked example, or wholly theoretical), a list of keywords describing the content of the article, and a number of "quality indicators" ranking the article content with one to three stars according to four criteria: research, practice, originality, and readability. The three star ranking is the highest mark. Each email notification includes hyperlinks to the full text of articles, providing convenient access to the information. There is one caveat, however, the full text is accessible only to extent of an institution's agreement with MCB.

A Search Strategy Service
SilverPlatter offers a search strategy current awareness service. Through their WebSPIRS SDI feature, you can save a search strategy and have it rerun automatically. Results are emailed to a specified address. To create an SDI, you must first submit a search. The search strategy is then reflected in the Search History part at the bottom of the screen. It must be selected by clicking the box to its left. You may select multiple search strategies. After selection, click the Create SDI button to fill out the Create New SDI form. An SDI one-word name must be chosen and an email address provided. Then you have the option to select an expiration date for the SDI and select whether to include the record number and database name and the type of field labels (long or short) in the email notification messages. Lastly, you may complete the Comment text box and indicate whether to use the comment as the email header. Clicking the Create SDI button saves the information and triggers a notification to the provided email address, informing you that the SDI "has been packaged and added to your account."

Depending on the options selected during the SDI creation process, the email notification includes a database name and record number and then lists the full citations, including abstracts and electronic availability, among other information. While SDIs are scheduled to run automatically once a week, you can force an SDI to run at any given time simply by clicking the SDI Account button from the search

page, selecting the SDI, and then clicking the Run SDI button. Through the SDI Account screen, you can also modify the settings for an SDI, delete it, or load it to use, for example, in another search strategy. You should keep in mind, however, that even though SDIs are run weekly, some databases are updated less frequently. EconLit, for example, is updated only monthly, meaning that an SDI created in EconLit will retrieve results only once a month.

When calling up the SDI Account screen, all SDIs created using the account are displayed. That is, in case of an institutional account, all SDIs created by every faculty, student and staff are displayed on the same screen. This opens up any SDI to modification or deletion by anyone. A more serious issue may be privacy, since the SDI Account not only reveals the search strategy but also its creator's email address.

A somewhat more secure option are SilverPlatter's Alerts!, which operate according to the same principle as SDIs, except Alerts! can be set up only by the account administrator. The idea behind Alerts! is for users to subscribe to existing SDIs. After clicking the Alert! button at the right side of the screen, you can click on any of the Alerts! to view information about the Alert!, including search strategy. To subscribe to an Alert!, you must enter your email address in the Subscriber textbox and click the Set Address button. The system then displays a checkbox to the right of each Alert! name, which must be clicked in order to select an Alert!. After selecting one or more Alerts!, the Register Subscriptions button must be clicked. This allows you to receive electronic messages once a week.

A Document Delivery Current Awareness Service
Some vendors offer both the Table of Contents and search strategy current awareness options. One such company is the UnCover Company. It makes its database of more than 18,000 multidisciplinary journal titles searchable to the public at no cost. Coverage is from 1988 to the present. Unique about this database is that after retrieving citations, you can have the full text of the articles delivered directly to your fax machine or desktop.

Reveal Service is the company's current awareness feature. A rather sophisticated tool, it provides two options: one, to use the service for delivery of tables of contents of the most current issues of selected periodicals (up to 50 titles) to a specified email address; or, two, to use the service to store up to 25 search strategies, which are automatically run against new articles added to the entire database on a weekly basis, and then also forwarded to a specified email address. Unique to this latter option is that it not only searches journal but also book citations. UnCover has contracted with the Academic Book Center, scanning approximately 600 new titles on a weekly basis and matching them to the search strategies. When setting up search strategies, you should keep in mind that the citations only are searched, which include the title and subtitle.

The uniqueness of a service like UnCover's Reveal, however, lies in the fact that once you have reviewed the emailed citations, you can then order articles or books through the company's document delivery service simply by sending a reply message. The UnCover Company fills requests for journal articles, whereas book orders are forwarded to the Academic Book Center. Journal article requests are generally filled within 24 hours. There is a $10.00 per article fee, plus applicable copyright fees.

The Reveal Service requires that you register or subscribe to the service by setting up a profile, which simply consists of your name, address, phone and fax numbers, payment information, and an email address. There is no charge for setting up a profile. The system assigns a profile number and you must create a profile password. Once the profile is set up, you may edit it--and review or revise your selected list of titles and/or search strategies at any time. Titles for the table of contents service can be added or deleted through the View or Add Reveal Titles screen accessible from the main Reveal menu. You may delete a title by clicking the box to the left of the title and clicking the Delete Search button. To add, enter the journal title and click the Search button, which will display an alphabetical list of titles. If the searched title displays, you can click it to obtain summary information. Then click the Add Reveal Title button, which will trigger a message indicating that the title list was updated. Similar steps are taken to add or delete search strategies.

A report of the orders placed by an individual profile may be obtained at any time after logging in. While searching the database is free, there is a $25 annual fee per individual profile for the Reveal

Service. Or, the service may be available to selected institutions through site licensing agreements.

Current Awareness on the Internet

What the above-described current awareness services have in common is that they provide bibliographic citations from print sources through proprietary databases. In a different category, the World Wide Web also offers current awareness services. Generally, notices of Web page changes, new search engine results, the most recent Usenet news articles, and current news stories can be emailed (Notess 75). The Internet has opened up an entirely new sphere for researching information. Unlike a proprietary database or a library collection, however, the Internet is not formally organized. And since anyone can post anything on the Web, the nature of information sources found on the Web differs significantly from what we have come to expect from print resources and electronic databases.

In an attempt to bring some structure to Web resources, the Internet Scout Project (http://scout.cs.wisc.edu) offers a current awareness service of a different kind. Sponsored by the National Science Foundation and housed in the Computer Science Department of the University of Wisconsin at Madison, the Project's motto is "surf smarter, not longer." Susan Calcari, director of the Internet Scout Project, states that "Even the best Web site can only complement, not supplant, more traditional forms of information such as periodicals, reference materials, printed monographs, and the assistance of a librarian" (Calcari 14). Targeting the higher education community, the project's mission is "to promote the progress of research and education in the United States by improving the Internet's information infrastructure through the advancement of its resource-discovery tools" (Calcari 11). One "resource-discovery tool" offered is the Scout Reports, a weekly compilation of selected and annotated Web sites. The Project also features three subject-specific reports in the areas of Business and Economics, Science and Engineering, and the Social Sciences, which are published bimonthly. Then there are "Net-Happenings", a daily report of Internet announcements, and its offshoot "Net-Newsletters", a selection of regularly published electronic magazines and more. Web sites are reviewed according to standards used to evaluate sources available through other formats, including content, authority, information maintenance (Is the site regularly updated?), presentation (Is the information logically organized? What is the loading time? Etc.), availability (Are there any downtimes?), and cost. Reports are cataloged according to the Library of Congress Classification system and made searchable in the "Scout Report Signpost" archive.

Finally, the type of current awareness service offered by the Internet Scout Project is basic: you receive a Report simply by subscribing to a mailing list. For example, to receive the bimonthly "Scout Report for Business and Economics", you simply subscribe to the SRBUSECON electronic mailing list. This is easily accomplished from the Mailing List Gateway (http://scout.cs.wisc.edu/misc/subscribe.html). After selecting a Report, you click the "Subscribe to SRBUSECON" link and follow instructions.

Summary

What, then, are the characteristics of a good current awareness service? Obviously service cost and database currency and coverage (Rowley 179). How often is the database updated and how often are notifications delivered to the user? What subject areas are covered? Information seekers should investigate a search interface's search profile, display, sorting and browsing options. Also, is the retrieval limited to citations, or does it include the abstract and possibly the full-text? Is hypertext searching, i.e. selecting words from a citation display search to link to other citations with the same words, allowed? Is local holding information indicated, or document delivery an option? With continuous technological developments and our need to stay current, current awareness tools of any fashion are increasingly invaluable. To find more information about current awareness services provided by different vendors, ask a librarian at your local library.

PART 3: BIBLIOGRAPHIC MANAGEMENT SOFTWARE

Rhonda Armstrong

When one needs to search many periodical databases, library catalogs, and web sites, then keep citations of these resources organized into a database of one's own, a bibliographic management software program is needed. Citations from the database can be used while writing a research paper and a bibliography

generated in an appropriate documentation style. Two examples of this type of software are ProCite and EndNote, owned by the same company, ISI ResearchSoft.

There are three major ways to enter citations into a ProCite database. The user may directly connect to a library catalog or database from within ProCite. The records can also be saved from some source and imported into ProCite. The third way is to manually enter in the citation information.

ProCite 5 will allow direct connection to Z39.50 protocol sites (see Gauvin for more on Z39.50 protocol). Hundreds of connection files are preconfigured and listed in the Host List to provide the necessary information to link to these sites. These are primarily large academic library catalogs and many of the commonly used periodical databases. The user may, of course, set up other host configuration files to add to the list. Configuration information must be changed as web addresses change and also appropriate passwords may need to be added to allow access to periodical databases. These library catalogs and databases can be searched from within ProCite and the results marked as desired to copy just the marked records into a ProCite database. Multiple locations may also be searched simultaneously which is another timesaving feature. One drawback to searching this way is that a search done from ProCite may not be as successful as one from within the individual catalogs or databases because of the added search capabilities those databases have for searching various fields of the records.

If the choice is made to search the databases from within the databases and not from within ProCite, the records would be marked, downloaded, and imported into ProCite through the use of import filters. These import filters are available for many online and CD-ROM databases. It is also possible to use Biblio-Link II, software that is included with ProCite, to create other import filters. An export plug-in is available to allow exporting from the Institute for Scientific Information (ISI) products and BioMedNet on the web.

Not only can records be imported from periodical databases and library catalogs, but also records can be imported from other bibliographic management programs such as EndNote and Reference Manager. This will allow colleagues with different software to still easily combine their bibliographies.

The user may also simply enter citations into workforms that are set up for many types of documents such as journal article, monograph, unpublished work, music score, newspaper article, web page, etc. In the case of a web page, there is an additional Tools command, Import Web Page, which makes it easier to add information to the workform because it automatically copies the URL into the form and displays information from the web site on a split screen for your convenience. The web site can be accessed when needed from within ProCite.

Management features of ProCite include the options of displaying many views of the citation records, showing different sort orders, and previewing formatting styles. A subject bibliography can be created by topic and an index produced. Retrieval of references is possible by the use of the Term Lists which are lists of keywords, authors, titles, journals, and workforms (document types) represented in the ProCite file. Other search capabilities include searching any of the ProCite record fields individually, searching all the fields, searching with Boolean operators (AND, OR, NOT, AND NOT), and with relational operators (=,<>,>,<,etc.). A search expression can be saved and reused when needed. After performing a search, those records can be selected and saved as a group.

Bibliographies can be created in styles that are required for many different journals. Over 600 are predefined and the user may add others. The bibliography may be saved as a Word, WordPerfect, HTML, or text file. One may also "Cite While You Write(tm)" which allows you to use a ProCite record as you need it for your paper without leaving your word processor. ProCite is then capable of generating a bibliography to match the citations used in the paper.

EndNote has many of the same features as ProCite. It too has many preconfigured connection files to library catalogs and databases as well. EndNote likewise has predefined filters for downloading from common databases. Both products are integrated into your word processing software so you don't have to exit the word processor to access the other software to get a citation you need. During the installation process, appropriate commands will become available from the menu command line. In Word, these

appear under the Tools menu.

EndNote and ProCite are especially strong in formatting references in scientific styles. EndNote 3 was praised for this in a 1998 Science article (Shmaefsky 54). EndNote 3 has formatting styles available in the following areas: agriculture, anthropology, biosciences, chemistry, genetics, geosciences, humanities, immunology, medicine, neural and behavioral, pharmacology, physics, psychology, public health, science, sociology, substance abuse, and virology. ProCite has basically the same formatting styles but the styles are just listed alphabetically by the style such as MLA, Turabian, etc. or by the name of the journal.

These two bibliographic management software programs are among the most frequently used in academic institutions. To learn more about them, a user may download a trial version of these and also a third similar product, the Reference Manager, from ISI ResearchSoft (www.isiresearchsoft.com). For more information on evaluating the products, see articles by Gauvin, Oka, Shmaefsky, Saxton, and McMahon. Regardless of the choice made, any one of these products will help streamline the process of keeping references organized and will save the user enormous amounts of time in the formatting of citations.

CONCLUSION

In conclusion, each section of this paper described advanced search techniques and features provided by a number of electronic databases. Some of the techniques and features are integral to all databases, such as help screens, different access points, and field limiting. Others are unique to particular vendor products, including InfoTrac's InfoMarks, or SilverPlatter's Alerts!. Common to all is that they can save time and effort and should be fully applied by a database user. In addition, specialized bibliographic management products not only complement electronic database searching and are convenient tools for researchers, but also ensure accurate documentation of materials.

Works Cited

Calcari, Susan. "The Internet Scout Project." Library Hi Tech 15.3-4 (1997): 11-18.

Fidoten, Robert E. "Current Awareness Service." Encyclopedia of Library and Information Science. Ed. Allen Kent and Harold Lancour. Vol. 6. New York: M. Dekker, 1968. 332-6.

Gauvin, Jean-Francois. "References to Go." EContent 22.5 (1999): 52. InfoTrac. Expanded Academic ASAP. A56072042. 29 Oct. 1999.

McMahon, Timothy E. "ProCite 4: a Look at the Latest Release in Bibliographic Management Software." Library Software Review 17.1: 4(12). InfoTrac. Expanded Academic ASAP. A20765954. 29 Oct. 1999.

Notess, Greg R. "Internet Current Awareness." Online 23.2 (March 1, 1999): 75.

Oka, Christine. "Reference Manager 9." Library Journal 124.17 (1999): 117. InfoTrac. Expanded Academic ASAP. A57534790. 6 Mar. 2000.

Rowley, Jennifer. "The Changing Face of Current Awareness Services." Journal of Librarianship and Information Science 30.3 (1998): 177-83.

Saxton, Matthew L. "EndNote 3.0." Library Quarterly 69.2 (1999): 287. InfoTrac. Expanded Academic ASAP. A54479894. 29 Oct. 1999.

Shmaefsky, Brian. "Order at the End." Science 281.5373 (1998): 54. InfoTrac. Expanded Academic ASAP. A20979770. 29 Oct. 1999.

Starkweather, Wendy and Camille Clark Wallin. "Faculty Response to Library Technology: Insights on Attitudes." Library Trends 47.4 (1999): 640-668.

Faculty Compensation Models for Online/Distance Education

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"Compensation Models for Teaching and Development of Asychronous Courses"

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Compensation Models for Teaching and Development of Asychronous Courses (Abstract)

This paper presents models of faculty compensation for teaching and development of asynchronous learning (ALN) courses. Faculty members concerns include teaching workload, course development effort, and ownership of intellectual property associated with ALN teaching. The models presented show that the system for adjusting faculty compensation for traditional courses can accommodate ALN course development and teaching. The problem of assigning ownership of ALN intellectual property must be resolved if faculty are to fully embrace ALN teaching methods.

Compensation Models for Teaching and Development of Asychronous Courses

This paper examines the key issues of concern to faculty members regarding compensation for teaching and developing asynchronous learning (ALN) courses. The issues of teaching workload, course development, and intellectual property ownership are examined.

Examples of current practices will show that the system currently used to adjust compensation for traditional courses can accommodate pay for ALN course development and teaching. Various compensation models are discussed.

Scope of the research

This research will focus on the issues that concern faculty in the following context:

• Teaching of courses taken for credit toward accredited baccalaureate or graduate degrees. Accredited

means by a body that is recognized by the U.S. Department of Education.

• Teaching in an asynchronous manner. A definition of asynchronous learning (ALN) is "self-study with substantial, rapid, asynchronous interactivity with others. In ALN, learners use computer and communications technologies to work with remote learning resources, including coaches and other learners, but without the requirement to be online at the same time." (ALNW 1999).

This definition of ALN is revised here to include asynchronous time or place. This broader definition includes the transmission of a live video signal, and the use of online text-based conferencing and chat tools, as ALN methods. These methods may involve asynchronous place, but synchronous time, for instructor and students.

• Teaching that is mediated by electronic means. This includes web-based or other computer network instruction, with or without content recorded on video. It excludes traditional correspondence courses (electronically delivered or not) and canned videotape courses if they involve primarily self-study with little interaction to be "mediated."

Compensation issues of concern to faculty

Asynchronous learning is very different from traditional face-to-face learning. Faculty members are concerned about increased teaching workload, greater course development effort, and uncertainty about ownership of intellectual property associated with ALN (Cox 1999; PBS Adult Learning 1999).

Teaching workload.

The workload in teaching an ALN course is greater than the workload in a traditional course (SchWeber 1999). Coppola, Hintz & Rotter (1999) interviewed 20 experienced ALN faculty and found that increased workload was their greatest concern. Karelis (1999) stated that "high marginal cost internet-delivered instruction" has the highest demand for faculty time per student of several teaching options.

Traditional teaching involves a face-to-face meeting between a teacher and a group of students. A face-to-face meeting allows teacher and students to communicate with inherently greater "bandwidth" than do ALN methods. Bandwidth is the amount of information that can be delivered over a medium, per unit of time.

The words spoken in a traditional classroom lecture are augmented by facial expressions, body language, eye contact, and peer-to-peer communication. Teacher and students can interact easily in a face-to-face setting. Faculty members are concerned that they will have to work harder to make up for the loss of bandwidth in ALN teaching, by making frequent electronic contact with individual students.

Communication technology provides the bandwidth of ALN methods, and requires capital investment. Faculty may be asked to teach more students per course, or more courses, to pay off investments by institutions in ALN technology.

Course development effort.

Faculty members must work significantly harder to develop an ALN course than to develop a traditional course (SchWeber 1999). Preparation for teaching an ALN course is more labor-intensive. A faculty member may need to codify course content into digital form, and present this material on a web site, with hyperlinks. Many faculty members find that learning how to use new technology to codify and present the information is a major undertaking.

The material of an ALN course may differ from that of a traditional course in kind as well as

form. ALN material may consist of more elaborate self-study components, as well as carefully orchestrated student-teacher contacts, peer-peer contacts, postings to discussion boards, and live discussions in chat rooms.

Ownership of course content.

Who owns the content of a course of study–the faculty member or the institution? A faculty member performs the task of arranging material into a traditional course of study. This "assorting" function adds novelty to the course, much like a retailer chooses a set of products that meets the needs of its customers. The "arrangement" of a traditional course resides in the person's mind and course notes, and becomes the intellectual property of the instructor. U.S. copyright law protects this arrangement (Salomon 1999).

What happens when the course design and material is codified into and stored in electronic form? Is this ALN property owned by the institution, by the faculty member, or jointly? Can the institution or faculty member license the course to other institutions? What happens if the faculty member leaves the institution–can he or she teach the course at another school? Can the institution keep teaching the course in his or her absence? These are all pressing questions to faculty members who face the prospect of codifying their knowledge into electronic form, without clear title to the results (PBS Adult Learning 1999).

Models for ALN Teaching

The role of faculty member in the ALN-enabled school is emerging, which makes it difficult to see how people will be compensated in the future. In the future, will ALN enable faculty to be more effective and efficient, and hence more valuable, as teachers? Or will ALN reduce teaching roles to the status of an adjunct instructor, and hence usher in doomsday for the fulltime faculty member? This paper assumes that in the short term the future of ALN teaching looks more like the status quo of traditional teaching than either of the two extreme scenarios.

Faculty members currently teach traditional lecture/discussion courses, very large lecture courses, small seminars, evening classes, and lab and studio classes, and others. The current system compensates for the various types of courses to make teaching them acceptable to faculty. This system can be used to adjust pay for ALN courses.

Faculty members who shoulder the extra workload involved in teaching an ALN course could be compensated with extra pay, decreased workload in other areas, or intangibles. The regular pay, augmented regular pay, overload, pay-per-class, and pay-per-student models are presented below.

Regular pay model:

One option is to compensate faculty for teaching of ALN courses at rates equivalent to those earned for teaching traditional courses. At a private West coast university that caters to working adults, an MBA Marketing Management class is taught online. Course materials include a textbook, and video clips and lecture text on the Web. The teacher and students discuss application questions by posting messages to a Web conference at their convenience.

The conference feature makes the workload of ALN teaching "about 1.5 times" that of a traditional class of similar size. Each student posts two comments to each discussion topic. The instructor responds to each posted message within 24 hours. This is a daily job, and the workload per student in an ALN class is "much higher" than a traditional class.

Faculty pay does not reflect this extra workload. A regular faculty member earns one credit toward a teaching workload of six courses for teaching an ALN course (the service or administration workload at this university is not known).

An AACSB-accredited mid-South business school offers a Marketing Strategy MBA course via live video and audio transmitted to remote sites. The "synchronous" time element makes this distance learning situation similar to a traditional class meeting. Some students meet at a different location than the professor, so the "asynchronous" place element precludes "face-to-face" interaction between all participants.

The limited communication bandwidth of video transmission creates additional work for the instructor. The faculty member must give extra effort to ensure that the system works and that students have received course material and sent assignments. The additional need to "project" information "over the wires," and elicit responses from afar, is an intangible but real burden on the distance video teacher.

A faculty member at this university receives no additional compensation for teaching a distance learning class. He or she earns credit toward the "regular" workload that is identical to a traditional class. The class meets once per week. An ALN course may require the faculty member to travel to the class "studio," for which he or she receives reimbursement for mileage but no pay for "windshield time" en route.

A private East coast business school offers "Executive MBA" courses in an ALN format. The courses integrate marketing knowledge with other business disciplines. "Behavior in the Workplace and Marketplace" combines organizational behavior and marketing, and "Accounting Information and Customer Value" melds accounting and marketing. The courses are presented by a combination of lecture on compact disk (video clips, PowerPoint with audio) and a weekly 90 minute group online chat session.

Faculty members receive identical credit for teaching ALN and traditional courses. The extra effort to "tool up" to teach ALN courses discourages faculty who don't find the method "fun, interesting, and novel."

The East coast university contracts with eCollege, Inc. to develop courses (discussed later) and to manage the technology. The school pays eCollege $120 per student from the $1845 tuition per course each student pays. University administrators are pleased because the economics of ALN are good. ALN courses do not cannibalize traditional MBA courses. The university has used ALN to increase access to private higher education, and thereby developed a new market of students such as women with young children.

Augmented regular pay model:

Another option is for faculty to earn "extra credit" for ALN teaching. In a Sloan Center for Asynchronous Learning Environments (SCALE) study at the University of Illinois, a faculty member taught both traditional and ALN versions of intermediate microeconomics (Arvan, et. al. 1998). The instructor "believed a multiple of 1.5 times would be a fair estimate" for adjusting pay between a traditional and ALN course. In other words, the teacher of a 60-student traditional course would receive 1.0 teaching credit, while the teacher of a 180-student ALN course would receive 1.5 credits, toward a workload quota. In practice, these arrangements are rare.

Overload pay model:

Currently "overload" pay is awarded when a faculty member teaches a course in addition to his or her regular full-time teaching duties. In this way, compensation for ALN courses is kept separate from pay for traditional teaching. A faculty member teaching an "overload" course receives no credit toward a workload quota. The teacher is essentially "moonlighting" at his or her institution. This arrangement is common for courses in non-credit programs, such as executive seminars and continuing education.

One CarnegieTier 1 Research university in the midwest offers a Consumer Behavior class online. Students can take a course without meeting face-to-face with the instructor. Students access some course material via the Web, and view other material (PowerPoint presentations with audio) from a compact

disk. Students communicate with the instructor via email.

The instructor teaches the course in addition to his or her "regular" faculty workload, and earns no extra credit. Each student pays fees of about $1280, and receives 3 credit hours for completing the course. The faculty member receives about $640 per student. The remaining $640 is split between the dean of the business school, the chair of the marketing department, the registrar, and the continuing education unit (which handles the transaction).

This arrangement gives the instructor the opportunity to focus on teaching a manageable number of students at a distance, and earn reasonable pay for his or her efforts. The instructor loses if distance teaching efforts detract from his or her "regular" duties. The institution benefits by getting incremental revenue from distance learning, if the students are "new" and not cannibalized from traditional programs.

At the private East coast university a faculty member who chooses to teach an online class as an overload to regular teaching earns $3000. This relatively low level of pay is designed to discourage faculty from taking on extra teaching at the expense of research activities.

Pay-per-class model:

Adjunct instructors are paid on a per-class basis. At the private West coast university mentioned earlier, an adjunct instructor of MBA Marketing Management (ALN or traditional class) earns $3,500.

This model is different from the overload model in that an adjunct instructor may not have a full-time teaching salary to supplement with the per-class pay. An adjunct generally earns less for teaching on a per-class basis than a regular faculty member. A shift to using adjunct instructors from full-time faculty is a source of cost savings for a university.

Pay-per-student model:

Teachers of correspondence courses are often paid on a per-student basis. At one land-grant university, for example, authors of correspondence course workbooks are paid $1600. The instructor of the course, whether author or not, receives $100 for supervising each student who takes the course. This is the worst-case scenario of the future of ALN teaching compensation for full-time faculty.

Models for ALN course development

Compensation for faculty effort in developing an ALN course, and the ownership of the end product, are inextricably tied together. Therefore these issues will be addressed jointly.

Course development.

A faculty member who develops a "new" course of traditional type is often compensated with salary for time in the summer, and/or "release time" from other duties during the academic year. Release time is "pay" of one credit for traditional course development toward the ten credit annual teaching quota, for example. (Developing a new course is not the same as the instructor preparing to teach an established course.)

Any compensation model must recognize the tremendous amount of faculty effort needed to develop ALN content. Also, compensation for up-front development of a course may be traded off against an ongoing stream of revenue to the owner. Therefore any compensation plan must clearly define the ownership rights to the material.

Course ownership.

The output of traditional course development efforts resides with the faculty member. He or she retains ownership of this intellectual property. The institution gets "paid back" for its investment as the faculty member teaches the new traditional course to students. If the faculty member leaves the institution, the contract is ended and the faculty member is free to teach the course at another school.

The faculty member is usually constrained by an employment contract from offering a course outside of the institution while employed there. For example, Arthur Miller of Harvard Law was stopped from teaching an online law course at Concord University, news that made the front page of *the Wall Street Journal* (Dockser 1999). (Concord University School of Law is a unit of Kaplan Educational Centers, which is owned by the Washington Post Co.)

These terms would be appropriate for the person who develops a web-based component for a traditional course, for example. What about development efforts for "high production value" ALN courses? The development of a sophisticated web site, or production of videotapes, may involve a faculty member working with a team of people and expensive equipment. How is ownership of the intellectual property allocated between the faculty member, production team members, and institution?

For example, Dallas Telelearning (2000) delivers the "Accounting in Action" course via a combination of video and web means. The production team for the course included a faculty member, two 6-person industry advisory panels, a videographer, a musicologist, a course designer, and others.

Also, ALN courses are in a format that can be presented independent of the faculty member. Who owns the rights to present, license, or distribute the course material? Compensation and ownership issues are currently being addressed in a variety of ways, as illustrated by the paid development, unpaid development, royalty, and share of revenue models presented below.

Paid development model:

In the SCALE study mentioned earlier, the faculty member who developed ALN content for an intermediate microeconomics course received "release time" from teaching one course, summer salary, and other funding totaling about $42,000. Faculty compensation can vary widely, depending on the scope of the online development project and by discipline. In another SCALE project, a faculty member received about $7500 for developing ALN material for an intermediate Spanish grammar course. Faculty members retain no ownership rights for the ALN material.

At the private West coast university, the developer of MBA Marketing Management received "a small amount" of pay for his or her up-front work. Subsequent instructors of Marketing Management receive no development pay, regardless of any effort they exert to revise or expand the course. The course "template" and online lecture text belong to the university.

At the East coast private university, a faculty member receives $5000 for developing lecture material on compact disk for Executive MBA classes. This pay is "not enough," according to a faculty member, to compensate for the time and effort expended, unless the instructor teaches the course several times. In addition, eCollege Inc. earns a $3000 one-time fee per course for developing the Web presence. A policy on ownership of intellectual property has not been made, or was unknown to the instructor.

Unpaid development model:

Many faculty members are taking the initiative to develop ALN material without support from their university. Their compensation is the "payback" in a better learning experience for the instructor and students that they expect to receive by using technology in teaching. Others are developing complete ALN courses "on speculation" of compensation at a later date.

At the mid-South business school discussed earlier, pay for development and intellectual property issues are not a priority to faculty who teach via video transmission. The materials for a course to be delivered via distance video are much the same the materials for a traditional lecture/discussion course, albeit more work to develop. The course is not codified in a form that would beg the question of ownership.

Lectures may be videotaped, and the title to copyright is unclear.

At the Midwest research university mentioned previously, the faculty member was not paid specifically for developing Consumer Behavior ALN content. The faculty member claimed the copyright on all materials. One would presume that under this arrangement a faculty member has sole rights to an ALN course, and could "take the course" to another institution if he or she changed jobs.

Royalty model:

This is another way for faculty to receive "future" compensation for current investments in development. Rather than receiving compensation for development from the university, the author of ALN content receives a royalty for each student who uses the material. This is the model that a publisher uses to compensate an author for developing a textbook.

Assuming that a faculty member has the discretion to use ALN material in teaching that is similar to the use of a textbook, and is paid accordingly, then the royalty model may be the simplest for all concerned. The royalty model allows the faculty and administrators to concentrate on teaching, and authors and publishers to focus on developing course materials.

There is a danger, however, that faculty will not have the discretion and compensation for ALN teaching that they earn for traditional teaching. Worse yet, instructors of traditional courses may be required to encode their knowledge into electronic form, without guarantee of ownership. This would effectively be a confiscation of their intellectual property.

In 1998, the faculty of York University in Toronto struck for 55 days to protest unilateral decisions by administration about the implementation of instructional technology. The full-time faculty won relief from these initiatives, in the form of contract wording that stated "a faculty member will not be required to convert a course (to electronic form) without his or her agreement" (Noble 1999).

Untenured York faculty members were required to codify their courses on video, CD-ROM, or the Internet or lose their jobs. They were later hired to teach the ALN courses at "a fraction of their former compensation" (Noble 1999).

Share of revenue model:

The "share of revenue" model is unusual in that it provides compensation to faculty after the work is done, but the compensation is front-loaded into the early offerings of the course.

This model pays a large but decreasing share of revenues to the developer of an ALN course, as he or she teaches it. David Ainsworth of Governors State University in University Park, IL described the following pay plan for ALN course development. The faculty member received 90% of the first $5,000 of net income, 60% of the next $5,000, 40% of the next $10,000, and 25% of income over $20,000. One person paid under this plan received a first check for $38,000 (PBS Adult Learning 1999).

This plan would be more desirable to a faculty member who is converting an existing course, with established student demand, than to a pioneer of a new course. Also, this per-unit pay plan is often used in risky new ventures. Faculty will be encouraged to participate in the transformation to ALN by receiving a generous proportion of each student's tuition. The more popular the course, the higher will be the pay for the instructor. There is a danger that, once the course is codified and established with continuing enrollments well past the break-even point, pay per course will be set at a fixed and much lower rate, and the institution will capture the surplus.

Limitations

These compensation models cannot answer many questions raised by the use of ALN methods. Is face-to-face meeting time between faculty and students an appropriate measure for faculty workload and compensation? How useful is "seat time" in a classroom to defining the amount of credit a student earns toward a degree? These questions will challenge the fundamental assumptions of the current system as ALN methods become more prevalent.

This research used accounts of exploratory work in the nascent ALN teaching industry. The examples presented here are from a convenience sample of marketing faculty members and courses. A representative sample of ALN courses would be needed to identify regularities in how faculty are compensated for ALN development and teaching.

Conclusion

Faculty members are concerned about increased teaching workload, greater course development effort, and uncertainty about ownership of intellectual property associated with ALN teaching. In the short term, the same system that is used now to adjust faculty compensation for traditional courses can accommodate ALN course development and teaching. In the long term, it is unlikely that faculty workload will be defined in terms of hours spent in a classroom. Technology will make this definition obsolete.

The problem of assigning ownership of ALN intellectual property is more difficult to address. Administrators, faculty senates, and faculty unions must wrestle with, and resolve, questions about intellectual property ownership if faculty are to fully embrace ALN teaching methods.

References:

ALNW. 1999. http://www.aln.org/alnweb/aln.htm

Coppola, Nancy, Roxanne Hiltz, and Naomi Rotter. 1999. Becoming a Virtual Professor: Pedagogical Changes and ALN. Proceedings of the Fifth Annual ALN Conference (Oct.). http://www.aln.org/alnconf99/presentations/convertedfiles/103/

Cox, Kevin. 1998. Costs and Online Education. *Web Tools Newsletter*. (Oct. 12). http://www.dco.cityu.edu.hk/tools/newslett/costsand.htm

Cox, Kevin. 1998. Costs of Online Education. *Web Tools Newsletter* (Dec. 11). http://www.dco.cityu.edu.hk/tools/newslett/costsof.htm

Dallas Telelearning. 1999. http://www.lecroy.dcccd.edu/prodsvcs/OnlineCourses/default.htm

Dallas Telelearning, 2000.

http://gln.dcccd.edu/plus/

Johnstone, D.B. 1996. Learning Productivity: A New Imperative for American Higher Education. *NLII Viewpoint* (1:1).

http://www.educause.edu/nlii/articles/johnstone.html

Karelis, Charles. 1999. Educational Technology and Cost Control. *Syllabus* 2 (6).

Katz, Richard N. 1998. *Dancing with the Devil: Information Technology and the New Competition in Higher Education.*. Jossey-Bass.

Marcus, Amy Dockser. (1999). Seeing Crimson: Why Harvard Law Wants to Rein In One Of Its Star

Professors. *The Wall Street Journal*, 22 November.

Massy, W.R and R. Zemsky. 1995. Using Information Technology to Enhance Academic Productivity. Wingspread Enhancing Academic Productivity Conference (June).

http://www.educause.edu/nlii/keydocs/massy.html

Noble, David F. 1999. Digital Diploma Mills: The Automation of Higher Education. *First Monday* 3. http://www.firstmonday.dk/issues/issue3_1/noble/index.html

PBS Adult Learning. 1999. Faculty Pay in Distance Education. Teleconference (Jan. 28).

Salomon, Kenneth D. 1999. Report on Copyright and Digital Distance Education. Presentation to 8th Tennessee Statewide Continuing Education Conference (Oct.).

SchWeber, Claudine. 1999. Taking the Time to Teach Online: Faculty Concerns and Family Attitudes. Proceedings of the Fifth Annual ALN Conference (Oct). http://www.aln.org/alnconf99/presentations/convertedfiles/103/

Twigg, Carol A. and Diana G. Oblinger. 1996. The Virtual University. A Report from a Joint Educom/IBM Roundtable. Washington, D.C.:Educause (Nov.)

http://www.educause.edu/nlii/VU.html

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Influences and Barriers to the Adoption of Instructional Technology

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Abstract

As instructional technology becomes ubiquitous in classrooms, faculty will be asked to utilize new technologies in their pedagogy. Some will accept new ways to teach with technology while others resist. What are factors that influence faculty to adopt this technology and find effective pedagogy to utilize it? The Department of Learning Resources at the State University of West Georgia asked its faculty about influences to technology adoption while creating a plan to tackle technology resistance. The resulting data showed the faculty recognized common barriers to instructional technology as well as influences that helped them overcome the barriers.

Introduction

Why don't we do it in the classroom? (with apologies to the Beatles)

Instructional technologists have asked this question since before we knew there were instructional technologists. Audiovisual specialists and librarians were among the first to ask why faculty members don't use new technology in the classroom? What barriers exist to the integration of technology into pedagogy? The success of our faculty members in adopting technology also impacts the success of our students and ultimately our institution. As the rate of adoption of technology in higher education has increased (Green, 1996, 1998), it is apparent this reflects the explosion of information technology in business and in the home in the 1990s. In this technology age, higher education must prepare students to integrate technology in their learning if our institutions expect to continue to be viable venues for students to prepare for the workforce. If higher education does not provide these instructional technology opportunities to students, it will be a disservice to them (Gilbert & Green, 1997).

Integrating technology into instruction is a critical aspect of the adoption process (Groves & Zemel, 1999). This is supported by the 1998 National Survey of Information Technology in Higher Education (Green, 1998) that showed 33.3% of the respondents reporting that "assisting faculty integrate technology into instruction" was the most important technology issue at their college or university (p. 1).

A study undertaken in Spring Semester 1999, asked the full-time faculty at the State University of West Georgia (UWG) about the barriers and influences to their adoption of technology into instruction. Their answers showed that UWG instructional technology support staff had already correctly identified many factors influencing faculty adoption of technology. The data also revealed that members of the UWG faculty are increasingly adopting technology and are planning to integrate more technology into instruction. The data also makes clear what faculty expect in support.

Literature

Michael Albright (1996) said in a keynote address to the Southern Regional Faculty and Instructional Development Consortium that so many barriers have existed in higher education to the adoption of instructional technology that faculty use of technology has been accomplished in spite of the campus

environment. He notes that education may be the only business which actually discusses the existence of barriers to its employees' adoption of technology.

Change in higher education has traditionally been slow. In the literature there is a reference to an anonymous quote apparently by a frustrated instructional technologist:

> *The pace of academe is perhaps best measured by the 25 years it took to get the overhead projectors out of the bowling alley and into the classroom (in Gilbert & Green, 1997, p. 25).*

Until the recent past, much information about the adoption of instructional technology has mostly been anecdotal or based on case studies. However, thanks to K.C. Green's Campus Computing Project and other researchers, we have a much better view of higher education faculties and of their use of instructional technology.

The survey in the UWG study is based on a previous survey by Groves and Zemel (1999) from an instrument developed by Spotts and Bowman (1995). The definition of instructional technology used in our study is one that refers to the use of technology to achieve an instructional objective (Spotts & Bowman, 1995). This technology includes computer hardware and software, networks, email, multimedia, and computer peripherals such as CD players. Traditional media such as video and audio are also defined as instructional technology.

A number of factors have been identified as barriers to the adoption of instructional technology. The fear of failure in using the technology is a factor that has been cited as an initial barrier (Hannafin & Savenye, 1993). While faculty members are experts in their content area, they are not experts in the use of technology. The fear that they will not be able to use the technology well in front of their students and colleagues is strong (Armstrong, 1996). Faculty also are afraid that technology will be difficult to use (Byron, 1995). When it is difficult to use, then faculty have problems and often refuse to use it again (Albright, 1996).

Availability of support staff when problems occur is an important factor for faculty using technology (Nantz & Lundgren, 1998). As technology becomes more user friendly, this becomes less of an issue. But as instructors first use instructional technology, the friendly, helping hand of support staff can make the experience easier.

Other anxieties that faculty face with technology are the devaluation of their profession and the possible elimination of their job (Novek, 1996). As distance learning and computer based instruction become more popular, some faculty may wonder if the role of the traditional campus is threatened (Oblinger & Rush, 1997). Faculty also worry that technologies may alienate students and diminish communication and other social skills.

Whether the use of instructional technology in the classroom is effective for teaching is also an issue which faculty consider critical (Byron, 1995). Faculty question whether students' performance will be improved with the use of technology. Research has shown that it is not the technology itself but how the technology is used that improves learning and increases student interest (Albright, 1996; Charp, 1998). In some institutions where technology is being adopted, faculty believe the integration of technology into instruction increases classroom performance (Luna & McKenzie, 1997). In a survey of California community college faculty, Luna and McKenzie found that 80% of faculty were using multimedia as a form of lecture support. Some 73% of the students reported multimedia to be a positive addition to the course.

Infrastructure development is important to instructional technology. As in the movie, "Field of Dreams," we must build technology so faculty will have a field of play. Without high speed networks there would not be the World Wide Web and efficient email. Development of multimedia classrooms brings computers, the Internet, video, and audio to the easy reach of the faculty. These are factors that students and faculty now consider essential. A study by the U.S. Department of Education reported that institutions recognize that information infrastructure is expected by faculty and students alike (Jacobson, 1996).

Time is always a critical resource for faculty, but time is at a premium with technology. Faculty members relate that it takes time to learn the technology and it takes even more time to develop instructional materials that utilize technology (Hirschbuhl & Faseyitan, 1994; Nantz & Lundgren, 1998). Sammons (1994) states that the lack of time to develop instructional technology materials is a major deterrent to the adoption of instructional technology. Faculty reported spending 15-20 hours a week to develop multimedia lectures and 150-200 hours converting one course to multimedia. Time and resources for development of instructional technology course will continue to be an ongoing issue. Green (1998) says that institutions have not been prepared for the sustained investment in time and support and financial resources needed to develop quality instructional resources.

One of the most important support issues influencing faculty to adopt technology is training (Armstrong, 1996). As faculty adapt technology to their pedagogy and grow in its use, they deserve recognition for their efforts. There must be a reward system that recognizes the adoption and integration of technology into instruction through promotion and tenure (Nantz & Lundgren, 1998). Institutional commitment is a critical element that affects faculty adoption of technology in the academic environment. Institutional and administrative commitment to instructional technology through financial support, infrastructure, and support personnel is essential for the successful development of instructional technology (Albright, 1996).

The Study

The sample for the study was the 348 full-time faculty at the State University of West Georgia. In the 1998 Fall Semester there were 8,667 students, who included 6,600 undergraduates and 2,067 graduate students. The institution has traditionally granted bachelors, masters, and specialist degrees, but recently was approved to grant an Ed.D.

A survey with 61 questions was adapted from an instrument previously used by Groves & Zemel (1999). The survey used in this study is almost identical to the Groves and Zemel instrument. Questions were designed to determine the faculty's self-reported knowledge and use of technology, factors influencing their use of technology, and perceived barriers to the use of technology in the classroom. Faculty were also asked about the importance of instructional technology to their teaching and if they would continue to adopt new technology (Groves & Zemel, 1999). There were 156 surveys returned by campus mail for a return of 44%.

Results

One hundred fifty-seven surveys were returned and usable. Forty-four percent (n=157) of the faculty returned surveys. The faculty ranks of the respondents were instructor (8.9%), assistant professor (42%), associate professor (19.7%) and professor (27.4%). There were 68 respondents (45.3%) who reported one to ten years experience in higher education. Forty (26.7%) said they had 11-20 years experience while 20% (n = 30) had 21-30 years experience. There were 12 (8%) who had 31-40 years in higher education. Seven (4.5%) did not report experience.

When it came to computer ownership, almost 90% said they had computers at home. One hundred five respondents (66.9%) reported they have an IBM compatible computer at home while 21 faculty (13.4%) said they used a MacIntosh. Nine faculty (5.7%) said they have both Mac and PC at home. Seventeen (10.8%) reported they have no home computer.

Faculty were asked about the importance of 13 factors influencing the use of instructional technology. They were asked to rate the importance of the factors on a five-point Likert scale (1 = not important; 2 = somewhat important; 3 = important; 4 = very important; 5 = critically important). The influencing factors have been grouped into three categories that include 1) instructional and learning issues, 2) equipment access and training, and 3) instructional materials, discipline-specific factors, and other issues.

Instructional issues ranked highest overall as influencing factors in the adoption of instructional

technology. Improved student learning ranked first with 89.1% (n = 139) of the respondents rating it very important or critically important as an influence. Forty nine percent (n = 77) rated it critically important (Figure 1). Clear advantages over traditional delivery was also rated highly as an influence by faculty with 80% (n = 124) of the faculty rating it very important and critically important (Figure 2). Increased student interest rated very important or higher by 70.5% of the respondents.

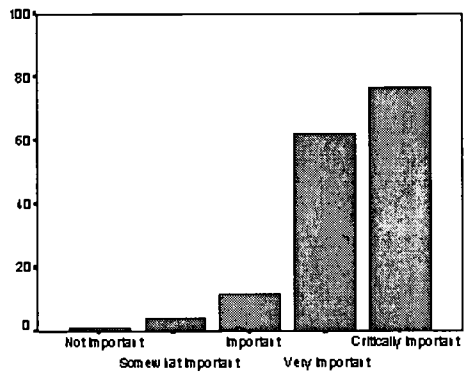

Figure 1. Improved student learning

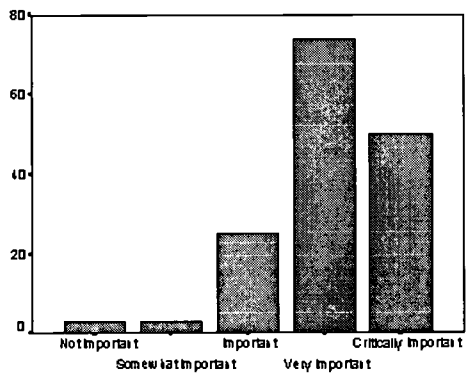

Figure 2. Clear advantages over traditional

Equipment access and training were also highly influential factors with faculty. Equipment availability was ranked second overall as an influence. Almost 89% (n = 138) ranked equipment availability as very important or critically important. Sixty-two percent rated it as critically important (Figure 3).

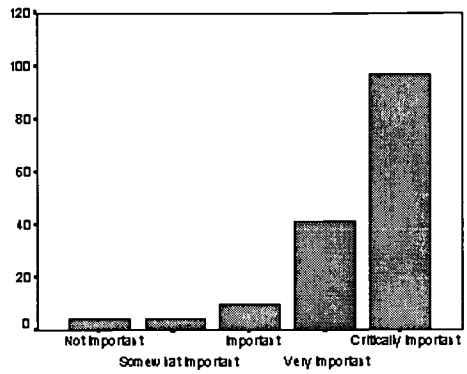

Figure 3. Equipment availability

Instructional technology's ease of use was rated very important or higher by 74.4% (n = 116) of the faculty (Figure 4). The time needed to learn how to use instructional technology was also ranked very important or higher by 72% of the faculty (n=113). Nine percent (n=14) said it was somewhat important or less (Figure 5). Training for faculty received very important or higher marks by 68.8% (n = 108) of the respondents.

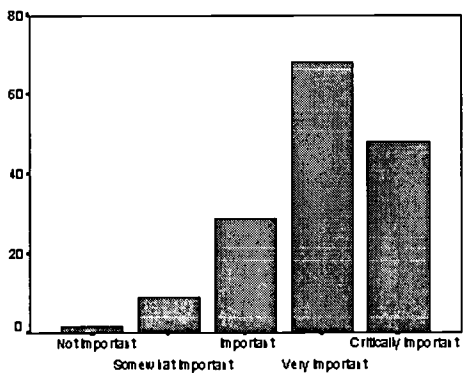

Figure 4. Technology ease of use

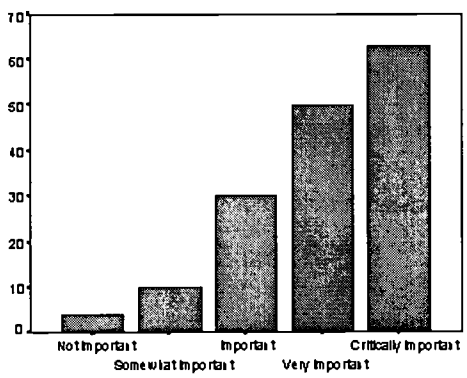

Figure 5. Time to learn technology

Funding for technology instructional materials rated very important or higher by 78.9% (n = 123). The compatibility of technology with existing instructional materials was considered very important or higher by 62% of the faculty. The compatibility of technology with a faculty's discipline was reported to be very important or higher by 71% of the respondents.

Frequent use by department colleagues was rated low as an influence. Sixty-four percent (n = 99) ranked it somewhat important or not important. Twenty-four percent (n = 37) rated it as important. Only 12.8% (n = 20) rated it as very important or critically important (Figure 6). Approximately 80% (n = 83) rated administrative support very important or critically important (Figure 7).

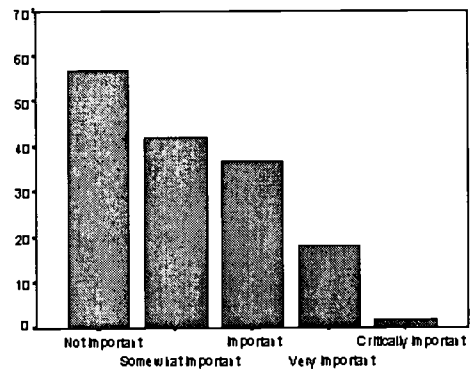

Figure 6. Use by colleagues

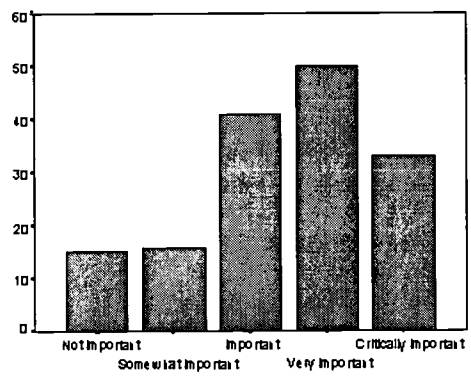

Figure 7. Administrative support

A faculty member's personal comfort level with technology rated very and critically important with 53.8% (n = 84) of the respondents. Twenty-two percent (n = 34) rated it somewhat important or not important.

Of the respondents, 53.2 % (n = 83) reported that instructional technology was very important or critically important to their teaching. Twenty-four percent said technology was important to instruction. Twenty-three percent (n=35) said instructional technology was somewhat important or not important.

Faculty were also asked about barriers to the adoption of technology. Six barriers to the adoption of technology were listed along with one open-ended question as an opportunity for a respondent to

identify a specific, but unlisted barrier the respondent considered important.

Lack of time received the top barrier ranking with 66.9% (n = 111) of the respondents marking very important or critically important (Figure 8). Lack of easily accessible equipment was listed a very important or critically important barrier by 58.2% of the respondents (Figure 9). A lack of training ranked close behind with 51% of the respondents stating it was a very or critically important barrier.

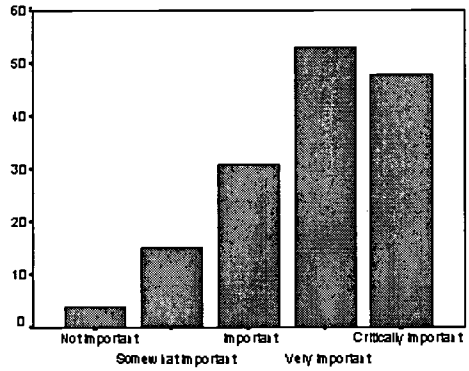

Figure 8. Lack of time

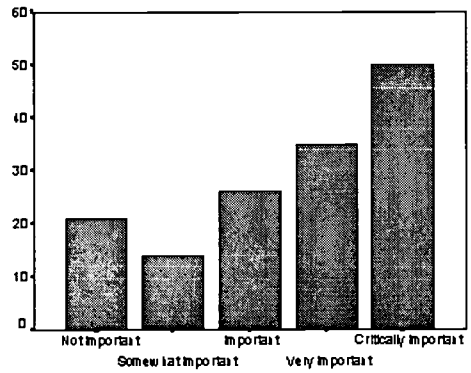

Figure 9. Lack of equipment

A lack of personal interest in technology received the lowest barrier rank with 70.4% (n = 100) of respondents rating it somewhat important or not. A lack of relevance to a faculty's discipline was rated as not important by 47.9% (n = 70) of faculty and somewhat important by 17.1% (n = 25) of faculty. Lack of contribution to professional development was rated not important or somewhat important by 61.4% (n = 89) of faculty.

No new barriers were added by respondents in the open ended question, but several faculty used the opportunity to make comments about the time commitment to learn technology and develop instructional materials, voice concerns as to whether technology can enhance learning, and to express frustrations with instructional technology.

Conclusions

The factors that influence faculty to adopt technology in this study and the Groves and Zemel study (1999) from which this study was adapted were rated and ranked similarly. The top two influences to the

adoption of instructional technology in this survey are instructional issues - improved student learning (96.8% important to critically important), and clear advantages over traditional methods (96.1% important to critically important). These results differed somewhat in rankings with the Groves and Zemel survey, which ranked equipment availability first with 97% and then followed by improved student learning at 97%. Equipment availability (94.9% important to critically important) ranked third in the UWG study. Increased student interest (93.6% important to critically important) was ranked fourth in this study but ranked third in Groves and Zemel at 96%. This suggests that UWG faculty perceive that technology must have a significant impact on instruction for faculty to adopt its use even though the technology must be available.

Other equipment factors that ranked high were ease of use (93% important to critically important), time to learn technology (91% important to critically important), and training (86.6% important to critically important). The high rankings also reflect critical factors for faculty, which perceive that time to learn technology and training in technology are essential. These factors ranked comparably with the Groves and Zemel study and in the same ranking order. Personal comfort level (78.2% important to critically important), even though above a majority, does not seem to have a major impact compared to pedagogy and hardware issues. Personal comfort level rated similarly in the Groves and Zemel survey at 80%.

The second lowest rated influence with positive ranking was administrative support with 80.1% rating it important to critically important. As an influence, faculty perceive administrative support technology as necessary to instructional technology but not necessarily critical. Least important of the influences to adoption in both this study and Groves and Zemel was technology use by colleagues. It seems the technology that a colleague is utilizing in class does not sway the respondents to adopt similar technologies. This was the only influence that faculty rated negatively with 36.5% reporting that it was not important and another 26.9% saying it was only somewhat important (Table 1).

Table 1. Factors influencing use of technology

	Factors influencing Use of Technology *			
	UWG	UWG rank	Groves & Zemel	G & Z rank
Improved student learning	97	1	97	2
Advantage over traditional teaching	96	2	92	4
Equipment availability	95	3	97	1
Increased student interest	94	4	96	3
Ease of use	93	5	91	5
Compatibility with discipline	93	6	86	8
Time needed to learn	91	7	91	6
Materials in discipline	90	8	83	9
Compatibility with materials	90	9	77	12
Training	87	10	87	7
Administrative support	80	11	80	11
Personal comfort	78	12	80	10
Colleague use	13	13	35	13
	* very importantly to critically important			

Issues of influences and barrier are not only linked but in many cases are opposite sides to certain factors. The top three barriers were equipment-oriented issues that also ranked high as influences - lack of time (87.4% important to critically important), lack of equipment (76% important to critically important), and lack of training (75.8% important to critically important). These factors reflected their comparable influences in their importance to faculty.

Three factors that received strong negative ratings as barriers were lack of interest in technology (70.4% not important to somewhat important), lack of relevance to the discipline (65% not important to somewhat important), and, surprisingly, lack of contribution to professional development (61.4% not important to somewhat important). With pedagogical issues ranking as such strong influences, faculty seem to be saying that the student is the focus and not the teacher.

How significant is instructional technology perceived to be? More than half of faculty in this survey (53.2%) said technology is essential to instruction with 83 respondents noting it is very important or critically important. Another 24.4% (n = 38) said it is, at least, important. These results were higher than reported by Grove and Zemel who found that 46% said it was very important or critically important. Spotts and Bowman (1995) reported 38% rated instructional technology very important or critically important.

A majority of the faculty also said there were incentives to the adoption of technology (65.9%), but it seems they have a variety of ideas about the definition of incentives. "If it improves learning, that's enough incentive," said a Professor in the College of Arts and Sciences. Yet another Assistant Professor in the College of Business stated, "Use is a disincentive because of all the time and energy it requires that can't be used for other professional/teaching assignments. " A College of Education Instructor said, "There is a push, but no incentives. " One Assistant Professor in the College of Arts and Sciences said "Yes, but I don't want incentives, there's too much pressure to use technology when it is not appropriate to my field." And yet an Assistant Professor in the College of Arts and Sciences said, "No, but there should be. "

In conclusion, faculty have pointed out influences that are important. The environment at the State University of West Georgia has become more conducive to the adoption of technology. An Associate Professor in the Library stated in the survey, "It is obvious that the climate on this campus rewards those who appear, at least, to be innovative." There is strong administrative support for technology. The President and Vice President of Academic Affairs are active in the use of new instructional technology, supportive of technology through funding and have encouraged the adoption of a technology plan which has been created by a faculty/technology staff committee. Faculty have stated that equipment availability is important and there has been an on-going development of campus networks as well as video and multimedia development in the classrooms. The academic deans have committed significant funds to the development of multimedia. One college's classrooms are all multimedia and the other has almost all multimedia classrooms. Faculty said training is important and there have been extensive training programs. A strong distance learning department exists and fully on-line programs continue to be developed.

One important aspect of technology adoption may be that the adoption of technology has passed the self-sustaining point on Rogers' diffusion of innovation adoption curve (1995). The early adopters at UWG have blazed the trail. The early majority has proven that instruction technology is effective. And now, as 53% say it is very important or critically importing to their teaching, instructional technology is simply being integrated by the late majority as just part of their pedagogy.

References

Albright, M. (1996). Instructional technology and higher education: Rewards, rights and responsibilities. Keynote Address at the Southern Regional Faculty and Instructional Development Consortium. Baton

Rouge, LA. (ERIC Document Reproduction Service No. ED 392 412)

Armstrong, G. (1996). One approach to motivating faculty to use multimedia. THE Journal, 23, 69-71.

Bailey, D. H. (1996). Constructivism and multimedia: Theory and application; innovation and transformation. International Journal of Instructional Media, 23, 161-165.

Byron, S. (1995). Computing and other instructional technologies: faculty perceptions of current practices and views of future challenges. A focus group study conducted for the information resources council and the office of the provost. (ERIC Document Reproduction Service No. ED 390 381)

Charp, S. (1998). Measuring the effectiveness of educational technology. THE Journal, 25, 6.

DeLoughry, T. J. (1995). Mandatory computers. Chronicle of Higher Education, 41 (34), A37-A38.

Gilbert, S. W., Green, K. C. (1997). Moving information technology into the classroom. In Linda Enghagen (Ed.), Technology and higher education (pp. 25-56). Washington, DC: National Education Association.

Green, K. C. (1998). Colleges struggle with IT planning, The 1998 national survey of information technology in higher education. http:\\ericir.syr.edu/Projects\Campus_computing\1998

Green, K. C. (1997). More technology in the syllabus, more campuses impose IT requirements and student fees. http:\\ericir.syr.edu/Projects\Campus_computing\1997\index.html

Green, K. C. (1996). Instructional integration and user support present continuing technology challenges. http:\\ericir.syr.edu/Projects\Campus_computing\1996\index.html

Green, K. C. (1996). The coming ubiquity of information technology. Change, 28, 24-29.

Groves, M. M., Zemel, P. C. (1999). Instructional technology adoption in higher education: an action research case study. International Journal of Instructional Media, 27, 56-64.

Haile, P. J. (1998). Multimedia instruction initiative: Building faculty competence. Paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education, New Orleans, LA, (ERIC Document Reproduction Service No. ED 418 056)

Hannafin, R. D., Savenye, W. C. (1993). Technology in the classroom: the teacher's new role and resistance to it. Educational Technology, 33, 26-31.

Hirschbuhl, J. J., Faseyitan, S. O. (1994) THE Journal, 21, 64-65.

Jacobson, R. L. (1996). Chronicle of Higher Education, 42 (19), A22-A25.

Kress, M. E., Hafner, A. W. (1996). Process and facilities as critical success factors in training and supporting faculty to use multimedia computer technologies. Association of Small Computer Users in Education (ASCUE) Summer Conference Proceedings, 29. 150. (ERIC Document Reproduction Service No. ED 405 824)

Luna, C. J., McKenzie, J. (1997). Testing multimedia in the community college classroom. THE Journal, 24, 78-81.

Miketta, J. B., Lundford, D. (1995). Teaching with multimedia in the community college classroom, THE Journal, 23, 61-64.

Nantz, K., Lundgren, T. D. (1998). Lecturing with technology. College Teaching. 46, 53-56.

Novel, E. M. (1996). Do professors dream of electric sheep? Academic aniexty about the information age. Paper presented at the Annual Meeting of the Association for Education in Journalism and Mass Communication, 79, Anaheim, CA. (ERIC Document Reproduction Service No. ED 399 594)

Oblinger, D. G. & Rush, S. C. (1997). The learning revolution. In Oblinger, Diana G. & Rush, Sean C., (Eds.), The learning revolution. The challenge of information technology in the academy. (pp. 2-19, 231-243). Bolton, Mass.: Anker.

Reimers, C., Rathbun, G. A., Goodrum, D. A., (1999). Energizing the innovative teacher: Technology's role. Paper presented at Association for Educational Communication and Technology Annual Conference, Houston, TX.

Resmer, M. A. (1999). IMS: Building the Internet architecture for learning. Keynote address at Mid-South Instructional Technology Conference, Murfreesboro, Tennessee. From the author's personal notes.

Sammons, Martha S. (1994). Motivating faculty to use multimedia as a lecture tool. THE Journal, 21, 88-90.

Spotts, T. H., Bowman, M. A. (1995) Faculty use of instructional technologies in higher education. Educational Technology, 35, 56-64.

Wright, S. W. (1997). Few colleges reward faculty. Community College Week, 10, 16.

"Integrating Technology into the Classroom"

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Abstract: We're living in a world of "old dogs" and "new tricks"—meaning non-technology oriented faculty and an abundance of technology—and running full force into a brick wall with many of our faculty. Just how do institutions encourage faculty to integrate technology into their classroom/courses and assist them in creating these learning opportunities? Hear what one institution—St. Cloud State University—has done to prepare faculty for this technology integration.

" Integrating Technology into the Classroom"

Today's classroom is very different from one 10-15 years ago. Technology not only makes classroom instruction easier, it can also make it more difficult. Although more classrooms are being equipped as "smart classrooms," frequently faculty do not feel adequately prepared to teach in these classrooms incorporating some of the newer technologies.

This presentation will explore the steps taken at St. Cloud State University (SCSU) to create interest in technology integration, identify faculty who are interested in these opportunities, and discuss the options faculty have to learn how to incorporate technology in their teaching. The cooperative efforts of the InforMedia Services unit within LR&TS (Library) and the Faculty Center for Teaching Excellence (FCTE) and their faculty development efforts will be discussed as will be College of Education activities to train faculty to incorporate technology in their teaching. Discussion will include "seed money" concept, discipline-specific opportunities, individual one-on-one instruction, and the ongoing efforts of LR&TS as well as FCTE for campus-wide faculty development and staff training. Also addressed will be administrative support and inclusion of a copyright component in the training.

Introduction and History

To paraphrase, "We've come a long way . . ." in media and materials used in a classroom, whether the classroom is one of the more traditional rooms or one which is termed a "smart classroom," equipped with computers, document cameras, CD-ROMs, ITV, Internet, etc. And very frankly, many of our faculty are not prepared to move beyond the chalkboard, bulletin board, and thermofax transparency. Thus, we have a gap, the grounds for training and development.

At SCSU, there are currently (1999-2000 school year) 60 smart classrooms, an increase of 15 since last school year. These smart classrooms vary not only in platform (some have both Mac and PC) but also in the sophistication and capabilities of the technologies in the rooms.

Technology Training Opportunities

Technology training. Providing technology training to SCSU faculty has been attempted by more than one group on campus. Fortunately, there has been a concerted effort to coordinate these

training efforts and co-sponsor activities. Technology training is provided mainly by faculty and staff in LR&TS, initially with the co-sponsorship of the FCTE. During the 1997-1998 school year, FCTE and LR&TS co-sponsored twelve hands-on technology workshops, including sessions on creating PowerPoint presentations, creating homepages, adding "pizzazz" to presentations through incorporation of graphics, integrating e-mail, finding resources on the WWW, and using word processing. Some presentations were in such demand that additional sections were added to accommodate the faculty wishing to participate.

One of the most recent training workshop series offered to faculty was "Web CT," an 8-part, 1-1/2 hr. per session series conducted by LR&TS faculty. Twelve faculty participated. The workshop was such a success it is now being offered a second time, once again with twelve participants.

Within LR&TS is the academic computing services area (ACS), a separate unit which provides no-cost computer workshops for students; previously faculty, staff, and students were included in these workshops, but the sessions are targeted now to students. Special arrangements can be made with ACS in the event faculty want to attend. During 1998-1999, ACS scheduled 87 workshops, serving 762 participants, most of whom were students.

FCTE sessions have included both hands-on and lecture sessions, including using technology in a large lecture room, adhering to copyright guidelines for print and non-print materials used in teaching, creating effective visuals for classroom use, incorporating basic applications of technology in teaching, teaching via ITV, and designing courses to be taught via ITV. In addition, the FCTE sponsored a year-long program, "Square One," as one-on-one mentoring with faculty to bring them "up to speed" with technology; this particular project was extremely labor intensive as one faculty member did all the mentoring, but this individual received release time to work on the project. The FCTE also publishes "tips and guidelines" for teaching in its "The Conversation" newsletter.

The Center for Information Media, the teaching component of LR&TS, has three master's degree tracks: information technologies, educational technologies (for media specialists), and human resource development/training. Graduate assistants are available through these programs to assist with the technology training of faculty, often on a one-to-one basis.

One final project to help faculty incorporate technology in their classrooms is called the RITE (Rural Integration of Technology in Education) Project Plan for the 1999-2000 school year. The project is based on the 1997 NCATE report which indicates teachers must know how to integrate and incorporate technology in the classroom prior to graduating from college. In order for college faculty to teach students to integrate technology, they (the university faculty) must be able to do this. This grant provides for professional development for faculty housed both within the College of Education and in the discipline/content areas covered in COE majors. This project provides for 10 teams (a mentor and a mentee in each team) and is to be completed by Spring or Summer 2000. University and public school teachers (25 in total) will be included in a one-week technology workshop during Summer Session 2000, where they will create an electronic portfolio; participants will receive payment for both hours attending the training sessions and the final portfolio project.

Creating interest in technology integration. Some faculty take it upon themselves to learn how to incorporate technology in their classes. Other faculty need a bit of prompting and seeing that it can be done. Most faculty in LR&TS will use smart classrooms and more sophisticated technology when teaching and/or giving presentations. Much of the interest has come from faculty who have seen other presentations and want to be able to emulate them.

Establishing the need for workshops/training. SCSU has established need for technology training through various means. In Spring 1998 LR&TS faculty member J. Nelson conducted a survey to determine faculty preferences for workshops which would be sponsored by LR&TS instructional development and academic computing units as well as the FCTE. Options included e-mail, PowerPoint, word processing, statistical applications, WWW, digital photography, networking,

and resource searching. Based on this survey, a variety of workshops were scheduled. Other bases for technology workshops include word-of-mouth requests and suggestions as well as workshop participants identifying future workshop topics and needs. On the Nelson survey, faculty were asked to identify type/size of session, length of session, and day/time of week preferred for workshops.

Publicizing technology training. Publicizing the technology training opportunities for SCSU faculty takes many forms. They are "advertised" on the SCSU listserv for faculty and staff, publicized in the university newsletter UNews (both hard copy and WWW), paper notices addressed each faculty member for FCTE sessions, and word of mouth. Attendance varies from three or four (rare exception) to full session (with additional sections scheduled). Faculty are encouraged to "bring a friend or colleague" for sessions.

Administrative Support/Recognition

Administrative support for technology training at SCSU has been strong. The office of the Vice President for Academic Affairs offers support for the FCTE, and the dean of LR&TS (Library) has committed one faculty person to conduct and/or coordinate technology training for faculty. Through grants, the College of Education has been able to offer release time and in some instances summer funding for faculty to work with technology integration in their classes.

Another critical area of administrative support is for softward and hardware which permits faculty to incorporate technology in their teaching. A Faculty Development Resource Room was established for faculty to receive one-on-one training and to spend time creating their materials. Both platforms are represented in this room, which includes a scanner.

Remuneration/Incentives for Faculty Training

Remuneration, whether it be in the form of release time or actual dollars, is very limited. Faculty, except in very rare cases, must learn these new technologies, media, and skills "on their own" and "on their own nickel." The statewide faculty contract currently allows for negotiation between a dean and an instructor teaching a course **the first time** over ITV for one course release the term prior to teaching the course, with the expectation the faculty member will undergo training in how to teach via ITV, including course design, materials development/adaptation, equipment usage, etc.

Copyright Information in Workshops

St. Cloud State University has taken a proactive stance on copyright adherence, including reference to copyright infringement and laws/guidelines in many of the technology workshops offered for faculty development. It seems to be an ongoing issue, with faculty divided on their willingness to acknowledge and adhere to copyright guidelines. It is the goal of LR&TS to assure compliance with copyright guidelines/laws for any educational materials created using SCSU resources.

What We've Found:

The findings below are generalizations in working with technology and faculty development:

1. Faculty prefer one-on-one training, whenever possible, very small groups otherwise.
2. Faculty prefer to have a session or series dedicated to one specific project on which they are working rather than just an introduction to technology; they want it applicable **at that moment**.
3. Faculty want to be paid in some way for their efforts, which is not being done to great extent at SCSU.

4. Faculty want the flexibility of repetitive scheduling so they can attend many desired sessions without having conflicts.

Conclusion

SCSU as well as other institutions are struggling to meet the technological needs and demands of its faculty through the use of a variety of effective training opportunities.

Institutionalizing Distributed Learning:

Models of Practice

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Abstract

To meet the challenges of a rapidly-growing student population, a desire to increase student retention and success rates, a shortage of classroom space, and the need to maintain quality educational opportunities for students, the University of Central Florida is strategically employing distributed learning. In three years, UCF has progressed from no coordinated distributed learning program to a highly-developed award-winning program consisting primarily of fully and partially Web-based courses. The significant issues that have led to the University's planning and implementation of a successful distributed learning initiative are institutional strategic planning, organizational structure, technical infrastructure, faculty development for teaching on-line, learner support, support for units, research and development activities, and impact evaluation.

Description of UCF's Distributed Learning Initiative

The University of Central Florida: Overview and Context

The University of Central Florida, a member institution of the State University System of

Florida, is a major metropolitan University whose mission is to deliver a comprehensive program of teaching, research, and service. The University offers degree programs at all levels of instruction with an enrollment of 32,000 students. Predictions indicate that by 2010 the University will enroll 50,000 students. Enrollment consists of many nontraditional, adult, and part-time students. The average age of students is 25-26 years old. Only 2,000 students are housed on campus. UCF is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award degrees at the associate, baccalaureate, master's, and doctoral levels.

The campus culture can be described as follows:

- appreciation of a balance of teaching and research missions
- responsiveness to change
- acceptance and expectation of collegiality
- acceptance of allocation of resources to increase/maintain program quality
- acceptance of allocation of resources to increase visibility for the institution.

Challenges facing the University

The University is facing challenges associated with dynamic institutional growth, a shortage of classroom space, and the commitment to maintain quality educational opportunities for students. In addition, changing student demographics, an increasing need for accessible lifelong learning, and advances in information technologies are realities that face the institution.

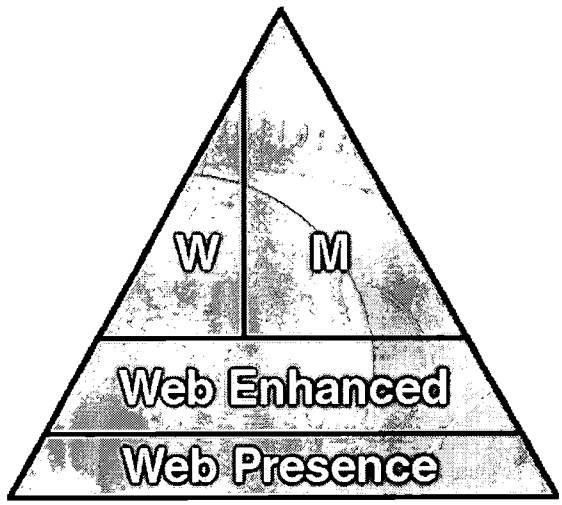
To meet these challenges and to support the University's goals, mission, and Strategic Plan, UCF is strategically employing distance and distributed learning. The various modalities employed were chosen to enhance student learning and success, to increase access, to improve classroom space utilization especially of large classrooms, to develop student and faculty information literacy, and to enhance student convenience and satisfaction. The University has chosen to employ the World Wide Web as its primary tool for distributed learning.

Credit courses are defined according to the following delivery methods:

- **Enhanced with media/electronic mail (E):** Courses are enhanced with the WWW or other electronic media-based materials. These courses do not reduce seat time with electronic instruction.

- **Reduced seat time/mixed-mode (M):** Courses require electronic media-based instruction that substitutes for some classroom time (reduced seat time). These courses have regular live meeting times. Students must have access to the Internet, a Web browser such as Netscape, basic Web browsing knowledge, ability to use e-mail, and basic computer skills such as word processing.

- **World Wide Web (W):** Courses are delivered fully over the Internet. Students must have access to the Internet, a Web browser such as Netscape, basic Web browsing knowledge, ability to use e-mail, and basic computer skills such as word processing.

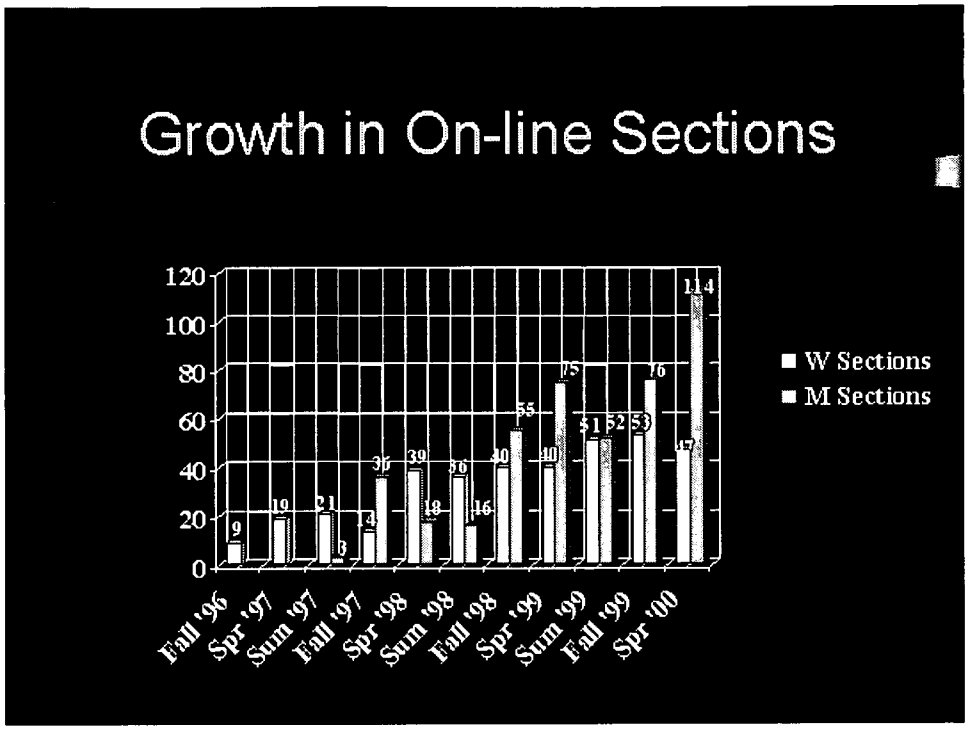


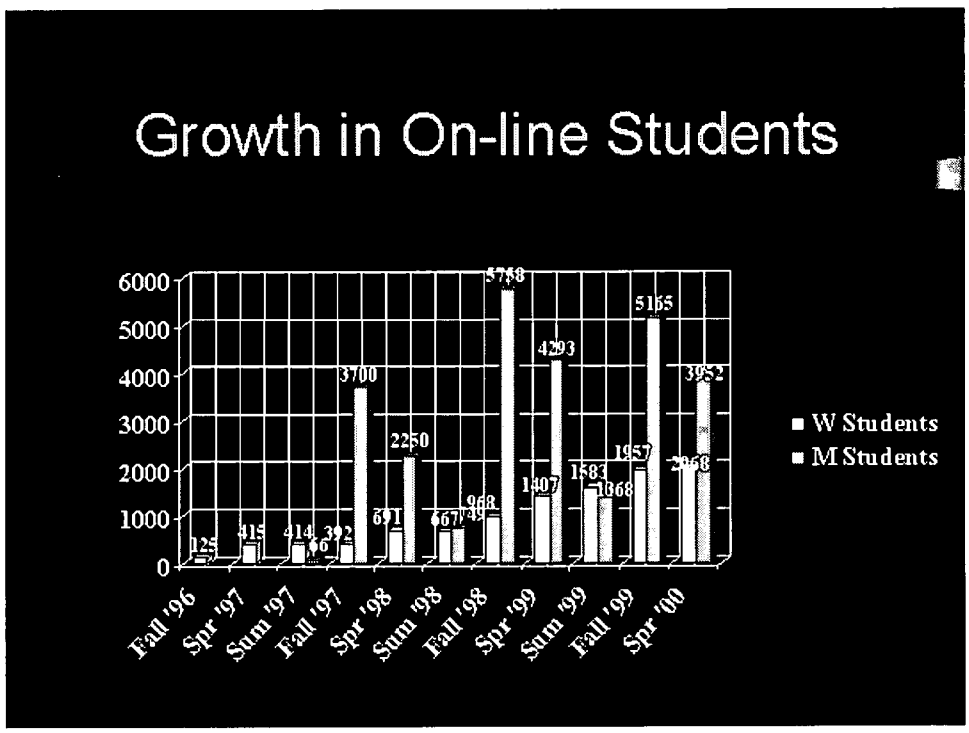
UCF Models of Web-based Instruction

Faculty receive assistance in building **W** and **M** courses that are pedagogically sound and visually appealing. Characteristics of UCF's Web-based courses include:

- instructor-led, highly interactive course
- learner-centered; active learning
- pedagogically sound instructional design
- clear learning objectives and outcomes
- opportunity to build computer literacy.

Since 1997, UCF faculty have developed over 200 on-line courses. During the Fall 1999 semester, 8,191 students were enrolled in 385 distributed learning credit course sections. In that semester, 55 fully Web-based (**W**) course sections enrolled 1,943 students, 78 partially Web-based (**M**) course sections enrolled 5,092 students, 68 interactive TV (**T**) course sections enrolled 697 students, 181 FEEDS (**F**) course sections enrolled 364 students, and 3 Radio (**R**) course sections enrolled 95 students. In addition, more than 9,700 students were enrolled in 120 courses that use the Web for enhancement.





Current and Anticipated UCF Web-based Degree Programs

The current Web-based degree programs are:

- B.S./B.A. in Liberal Studies (Web-based degree completion program)
- B.S. in Vocational Education and Industry Training (Web-based degree completion program)
- R.N. to B.S.N. Nursing (Web-based degree completion program)
- M.A. and M.S. in Vocational Education (Web-based)
- M.S. in Industrial Chemistry Forensic Science Option (partially Web-based)

- Curriculum and Instruction Ed.D. Program Community College Focus (partially Web-based)
- M.A. in Educational Media (Web-based).

The following degree/certificate programs are under development for future full Web-based delivery:

- A.S. to B.S. in Radiologic Science
- M.S. in Nursing
- Graduate Certificate in Technical Writing.

Recognition of UCF's Distributed Learning Initiative

UCF has received the following recognitions for its Distributed Learning Initiative:

- **Excellence in Distance Learning Programming/Higher Education** award presented by the **United States Distance Learning Association**, for excellence in designing and delivering an outstanding and comprehensive distance learning program service, March 2, 2000, Washington, DC, at TeleCon East 2000, the world's leading conference for on-line/distance learning technology and applications.
- UCF was awarded a $200,000 grant in 1999 by the **Pew Learning and Technology Program at the Center for Academic Transformation** as part of the Pew Grant Program in Course Redesign for redesigning a high enrollment introductory general education course, POS 2041 American National Government.
- **APQC-SHEEO** (American Productivity and Quality Center--State Higher Education Executive Officers) faculty development award for using technology in teaching as one of five "best practice" institutions in North America, presented in November, 1998.
- UCF was recognized in both 1998 and 1999 as among the nation's **100 Most Wired Campuses** by *Yahoo Internet Life* magazine.

Davis Productivity Awards are presented annually to honor individuals and work units of Florida state government for innovation, creativity, and smart work that measurably increase performance and productivity in the delivery of state services and products.

- A ***Davis Productivity Award*** was awarded to UCF in 1998 for *POLARIS* for the improvements in service and decreased operating costs that it afforded. *POLARIS* is a Web interface to many administrative services for students, faculty, and staff.

- A ***Davis Productivity Award*** was awarded to UCF in 1999 for efforts to restructure telecommunications services to improve performance and reduce costs.

Models of Practice

Eight institution-wide components contribute to UCF's success in distributed learning:

- institutional strategic planning
- organizational structure
- technical infrastructure
- faculty development
- learner support
- support for units
- research and development
- impact evaluation.

The first three are core readiness characteristics that must be present to employ distributed

learning on an institutional level. The next two require full institutional support for the distributed learning program to be successful. And the final three account for distributed learning growth and continued improvement.

Institutional Strategic Planning

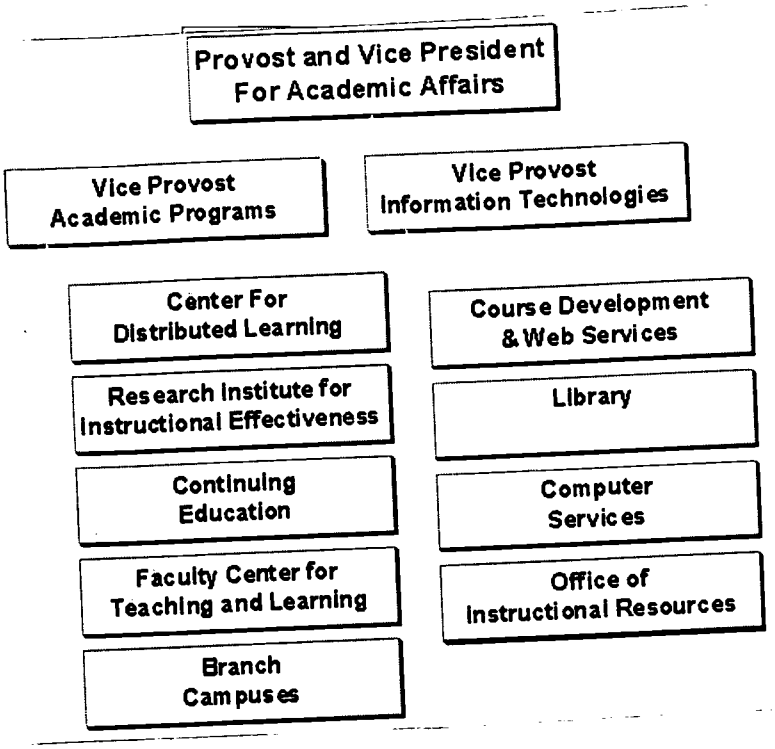
The innovative use of information technology is integrated into UCF's Strategic Plan and senior administrators have identified IT as a means of achieving the institution's goals. The University's early history provides the background for its continuing focus on technology. UCF was established in 1963 as Florida Technological University primarily in response to the need for scientists and engineers at the Cape Kennedy space complex. In 1994 the University Strategic Planning Council was charged with revisiting the 1991 Strategic Plan with the subsequent revision completed in 1996. The present plan has, as its central support, the original five goals identified by President John C. Hitt and adopted in the 1991 Strategic Plan. The five goals are to:

- offer the best undergraduate education available in Florida
- achieve international prominence in key programs of graduate study and research
- provide international focus to our curriculum and research programs
- become more inclusive and diverse
- be America's partnership University.

In order to accomplish the five goals, the Strategic Plan delineated four strategic directions, one of which is the innovative use of technology. The Strategic Plan recommends the maintenance of an advanced institutional technology infrastructure that supports the institution's primary functions of teaching, research, and service, and the provision of adequate technology for all faculty, staff, and administrators. The plan encourages the proactive development and deployment of instructional technologies and distance learning delivery modes to facilitate time- and place-independent learning or just-in-time learning.

Organizational Structure

The structure of the University administration has been organized to support distributed learning program development and the use of technology to enhance operational excellence. The Division of Information Technologies and Resources, formed in 1995, brings together the Library, Computer Services (academic and administrative computing), Telecommunications, and Instructional Resources into a single administrative unit. The position of Vice Provost for Information Technologies and Resources was created to head this division, which reports to the Provost and Vice President for Academic Affairs. During 1996 the Course Development & Web Services unit was formed to create on-line courses and provide related faculty development support. In 1997, the Vice Provost for Academic Affairs reorganized his division to create the Center for Distributed Learning.



Organizational Structure

Information Technology Infrastructure

Computing is fully integrated into the UCF campus culture. The University is committed to the maintenance of an advanced institutional technology infrastructure that supports the institution's primary functions of teaching, research, and service, and the provision of adequate technology for all employees and students. The Information Technologies and Resources Division facilitates a comprehensive and coordinated response to the University's information technology needs.

Networking: Networking has become a core strategy as well as a resource for the University as it strives to serve a growing student population over an expanding geographic area and extends into new areas of research. Although UCF was recognized in both 1998 and 1999 as among the nation's **100 Most Wired Campuses** by *Yahoo Internet Life* magazine, our goal is to be more than simply a "wired campus". UCF is using network technology to create a sense of community, extending "7 by 24" access to information, services, and people to all students and employees.

Stated simply, our objective is to create a high performance and ubiquitous network, fill it with useful information and services, and make it accessible to all UCF students, faculty, and staff. In response to the institution's rapid growth and distributed student population, UCF is harnessing its network and the Web to provide expanded access to institutional information and services.

A series of core network services has been established consisting of electronic mail, the World Wide Web, the full suite of Internet utilities (e.g., telnet, ftp, etc.), a wide array of on-line library information, image processing, and on-line course delivery. Access to UCF information and services is available through the University's main website (**www.ucf.edu**) and services such as POLARIS, a Web interface to many administrative services for students, faculty, and staff. POLARIS was awarded a *Davis Productivity Award* by the State of Florida in 1998 for the improvements in service and decreased operating costs that it afforded. These services are

available to all UCF network users. All central servers have been continuously upgraded, and new servers have been added to accommodate the growth in both users and on-line information. The number of main network servers has doubled over the past two years.

UCF is a charter member of Internet2, and has played a leadership role in the advancement of education and research networking in Florida. UCF is one of only approximately 160 institutions with high performance connections.

Another distinguishing feature of UCF is the degree to which information technology is integrated into the institution's Strategic Plan (the current plan makes more than 60 specific references to IT), and the degree to which senior University administrators have identified information technology as a means of achieving the institution's goals.

Infrastructure: In 1996, UCF completed a campus connectivity project, through which all faculty and staff offices not previously connected were provided with access to the campus backbone network. New premise wiring, optical fiber, and network components were implemented throughout the campus to establish universal backbone network connectivity. New faculty PCs were added and old PCs have been continuously upgraded.

At the same time, the network backbone has been upgraded from Ethernet to ATM operating at OC-12 (622 Mbit/second), with distributed 100 Mbit/second Ethernet switches. All primary network servers are directly connected to the ATM backbone, resulting in improved security and significantly enhanced performance. Multiple T-1 data links were installed between the main Orlando campus and our branch campuses and centers, linking these sites to the backbone network to support access to campus network services and the delivery of interactive video for distance learning.

The campus modem pool was modernized and expanded in 1997, and is further expanded each year to keep up with demand. Modem pools were added at the Brevard and Daytona branch campus sites to provide free local dialing for those service areas. There is no user fee for use of the UCF modem pool.

A system of Universal Access was implemented in 1995, whereby all UCF students, faculty, and staff are provided with network and e-mail accounts. User accounts remain active throughout an individual's association with UCF.

The University's new data center in the Computer Science Building houses Computer Services and campus network operations, providing a state-of-the-art environment. The building also includes computer laboratory space and a 450-seat multimedia auditorium.

UCF is adding major buildings at a rate of one or two a year, and all new buildings are being designed with full multimedia and data network resources. Through a companion program, existing classrooms are being converted for multimedia instruction, network access, and computer-video display.

A major effort has been undertaken to expand and modernize campus public computer labs, and currently more than 1,200 lab PCs are available. Lab computers are on a three-year replacement cycle, and all labs are equipped with 100Mbps network connections, dedicated software servers, and high-speed laser printing. Trained consultants are available in all public labs. Labs and help desk support are available to UCF students and faculty 24 hours a day, including telephone, Web and walk-in assistance.

Administrative systems: A major project is underway to implement new administrative systems. PeopleSoft Student Administration and Human Resources systems will go into service during the coming 18 months, featuring an extensive Web interface to information and on-line transactions for students, faculty and staff. More UCF students now register over the Web than by any other means.

Faculty Development

Various units in the two Divisions mentioned above provide support for faculty: Course Development & Web Services, the Center for Distributed Learning, the Faculty Center for Teaching and Learning, the Office of Instructional Resources, the Library, and Computer Services.

UCF began an intensive faculty development program in the summer of 1996 to systematically teach faculty to create interactive learning environments for on-line delivery. Course Development & Web Services (CD&WS) provides specialized training for faculty learning to teach in the on-line environment through an award-winning course, *IDL 6543: Interactive Distributed Learning for Technology-Mediated Course Delivery*. *IDL 6543* is an eight-week faculty development program designed to create interactive on-line environments to support mainstream faculty as well as early adopters and innovators. A course approach was designed to create collaboration and experiential learning. As the faculty development program matured, the delivery format modeled teaching with technology in the form of a simulated course. Since 1996, more than 200 faculty from all of UCF's five colleges have been involved in the *IDL* faculty development program.

As faculty attend *IDL 6543*, they build activities and Web pages for use in their courses. Participants are given a new computer or upgrade, release time or dual compensation, and course design and production support to develop and deliver their course. As more interest in the faculty development initiative arose, the Office of Academic Affairs established a request for proposal (RFP) process. Faculty are required to attend and participate in *IDL 6543* and work with staff from the Course Development and Web Services unit to design and develop their on-line course materials. The unit has teams of full- and part-time instructional and digital media designers, programmers called *Techrangers*, and software engineers to assist with course production support. Approximately 350 faculty have received support from CD&WS since the summer of 1996. In the fall of 1997, UCF adopted WebCT, an on-line course management tool. Today, there are over 800 WebCT accounts in use at UCF with over 30,000 registered users in those accounts.

In November 1998, UCF received an *APQC-SHEEO* (American Productivity and Quality Center--State Higher Education Executive Officers) faculty development award for using technology in teaching as one of five "best practice" institutions in North America.

The goals of one specific initiative within the *IDL 6543* faculty development program related to undergraduate education are to:

- improve the quality of large-classroom instruction by enhancing interactivity with Web-based techniques.
- enhance the retention (or completion rates) in courses that traditionally have low student success by using Web-based techniques to increase student-student and student-instructor interaction, providing automated tutorials, and monitoring student progress using Web-based techniques.
- enhance classroom productivity by using a combination of Web-based and synchronous course delivery. For example, a course that normally meets three hours a week would meet only once a week, with the remainder of course content delivered over the Web.

The benefits of institutionalizing faculty development for on-line learning are:

- experiential learning for faculty participants
- cross-discipline sharing of teaching techniques
- creation of learning communities among faculty
- creation of lifelong learners among faculty
- discussion of the teaching and learning process

- peer evaluation of successes and failures
- faculty exposure to tools and instructional best practices
- modeling of a combination of delivery techniques
- cooperative and collaborative learning techniques
- greater flexibility for busy faculty
- transformation of all teaching for more active learning delivery.

The CD&WS instructional designers act as change agents to facilitate building a cultural change across disciplines for faculty with varying levels of technological ability and experience. Students are recruited each semester on campus to become *Techranger* programmers. These students are actively involved in supporting course development and production enabling faculty to focus more of their time on teaching and research.

Learner Support

Units throughout the University provide support for learners who are enrolled in on-line courses. An internal strategic planning grant was awarded in the summer of 1997 allowing staff from CD&WS and the Center for Distributed Learning to collaboratively develop *The Pegasus Connections Disc*. This CD-ROM provides learner readiness assessments, tutorials, just-in-time access to UCF information and services, software tools and plug-ins to connect to the campus network. Today, all UCF students and faculty receive a copy of *The Pegasus Connections Disc* during orientations.

Technical support is provided almost 24 hours a day by phone, e-mail, and at labs by *CyberKnights,* student computer consultants who assist UCF students with questions related to the use of the public access labs to complete their class assignments. Full- and part-time staff work in campus computer labs to provide face-to-face, telephone, and on-line support for students needing assistance with their courses. PALS On-line is an academic support program of peer tutors who assists students to successfully complete Web-based courses.

In addition, the UCF Center for Distributed Learning has responsibility for planning and administering the University's interactive television and Web-based programs. The Center serves as a clearinghouse for processes and resources in support of off-campus and distributed learning credit programs, courses, and students, as well as marketing for both live and distributed learning courses. It also provides leadership and coordination for efforts to achieve accreditation for distance learning programs throughout the University.

The Distributed Learning Advisory Committee (DLAC) was established to advise the Vice Provosts for Academic Affairs and Information Technologies and Resources, and the Director of the Center for Distributed Learning. The DLAC identifies academic program and support issues and makes recommendations in two main areas: (1) the development and implementation of quality distributed learning courses and programs, and (2) fulfillment of Southern Association of Colleges and Schools (SACS) accreditation requirements. The Committee meets monthly and consists of representatives of colleges, teaching faculty, branch campuses, and University administrators.

The Distant Student Support Committee meets every semester to discuss issues related to the needs of distant students, such as admissions, registration, orientation, health requirements, student accounts, library services, and bookstore. It consists of representatives from the offices providing the above services for students.

Support for Units

Resources are available to assist colleges to develop on-line programs and courses quite rapidly. Institutional support is focusing on degree and certificate programs and introductory high-enrollment courses, rather than individual courses, for Web-based delivery. **W** and **M** on-line courses are supported at the institutional level. Undergraduate and graduate degree

programs proposed by departments and approved by the colleges are supported through grants for faculty development and course redesign and development. Colleges respond to an RFP and propose courses, degree and certificate programs for on-line development based upon their own strategic plans for distributed learning. Grant awards provide a course release or dual compensation and other support for faculty to participate in the faculty development course for on-line teaching and receive instructional design and programming assistance.

Impact Evaluation

Since 1996 the University has collected data on the impact of its distributed learning efforts regarding student and faculty demographics, growth in enrollment and sections, student and faculty perceptions to learning and learning on-line, and problems encountered while teaching and learning in the on-line environment. Strong administrative support for evaluation has resulted in a coordinated approach to collecting data about student and faculty demographics, growth in enrollment and sections, student and faculty perceptions to learning and learning on-line, and problems encountered while teaching and learning in the on-line environment. These evaluation data have been used to target improvements in faculty development, learner support, and technical support needed by both faculty and students.

The guiding principles of the impact evaluation are:

- Evaluation should conform to the culture of the institution.
- Uncollected data cannot be analyzed.
- Data do not equal information.
- Qualitative and quantitative approaches must complement each other.

Student components that have been studied by the distributed learning impact evaluation staff include success rates, withdrawal rates, and learning styles. Issues affecting faculty that have been studied include critical thinking, data warehousing, effective instructional tools, quasi-experiments, and accreditation. Attitudes, demographics, and strategies for success have been examined for both students and faculty.

An examination of courses in Fall 1998 found that **M** courses outperformed their matched face-to-face counterparts. **M** sections produced a success rate (a grade of at least a C) of 86 percent (N=1,321 students), which was significantly higher than the success rate of 79 percent in the face-to-face sections (N=2,255 students).

Furthermore, these **M** sections had significantly fewer withdrawals (3 percent) when compared with face-to-face sections (6 percent).

Research and Development Agenda

The following are current and planned research and development activities that provide data and support for the University's distributed learning initiative.

Course Development & Web Services Development Activities

Software Engineering & Web Production

- E-Works work flow for production support
- Oracle WebDB for simple database management
- Educause's Instructional Management System
- E-commerce especially using PeopleSoft
- Web-based intelligent agents
- Integrating WebCT with Oracle and PeopleSoft
- Knowledge base development
- XML

- Video storage and serving
- Object-oriented media storage and management

Instructional Design

- Intelligent tutoring
- Intelligent computer assisted instruction
- Macromedia Authorware and Director applications
- Instructional game development
- Network-based games
- Network-based, Performance Support System Development
- Network-based simulations and animations
- Human factors for improved interface design
- Virtual team support
- Video conferencing
- Advanced video production

Administrative Support

- Business processes for production factoring in turn over and part-time staffing

Distributed Learning Impact Evaluation Research Activities

- Collecting and analyzing data on student participation, success rates, and withdrawal rates in fully on-line and media-enhanced (reduced seat time) courses
- Assessing the impact of learning styles in the on-line environment
- Assessing the satisfaction of students and faculty with the on-line environment
- Developing data sets to enable analysis of demographic trends for students and faculty participating in on-line courses
- Using evaluation results to develop strategies for success for faculty and students
- Supporting faculty research on teaching and assessing critical thinking on-line
- Developing real time approaches to data collection
- Assisting faculty with quasi-experiments looking at teaching effectiveness in on-line environments
- Assisting faculty to assess the impact of on-line teaching and learning on the accreditation process
- Assisting faculty to assess the impact of teaching large enrollment on-line classes
- Assessing faculty changes in personal theorizing
- Evaluating the effectiveness of various assessment devices in the on-line environment
- Documenting and assessing the process of re-engineering courses for full Web delivery and for media-enhanced (partial Web) delivery
- Assessing the impact of fully on-line and media-enhanced classes on student rating of instructor performance
- Developing profiles of those who withdraw from fully on-line and media- enhanced courses
- Assessing how on-line teaching fits into the University culture
- Developing strategies for predicting success in various on-line instructional environments

UCF Distributed Learning Related Websites

• University of Central Florida	http://www.ucf.edu
• UCF Distributed Learning	http://distrib.ucf.edu/
• Center for Distributed Learning	http://distrib.ucf.edu/cdl
• Course Development & Web Services	http://reach.ucf.edu/~coursdev/
• IDL 6543 Faculty Development Workshop	http://reach.ucf.edu/~idl6543/
• Distributed Learning Impact Evaluation	http://reach.ucf.edu/~research/
• Office of Instructional Resources	http://www.oir.ucf.edu/
• Academic Computing Support	http://www.ir.ucf.edu/
• Faculty Center for Teaching and Learning	http://reach.ucf.edu/~fctl/

Music Teaching Resources Shared by the Associated Colleges of the South
Mid-South Instructional Technology Conference
April 9-11, 2000

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http://gray.music.rhodes.edu/musichtmls/faculty/gray.html

Abstract:
The Andrew W. Mellon Foundation has made possible a number of Teaching with Technology Fellowships administered through the Associated Colleges of the South. These fellowships have resulted in a music resource archive (http://database.acs.southwestern.edu/faculty/) which includes music appreciation class resources, interactive quizzes, sites on the history and construction of instruments, and animations illustrating concepts in musical form and analysis and other aspects of music history.

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Music Teaching Resources Shared by the Associated Colleges of the South

The Associated Colleges of the South (acs.colleges.org) has historically encouraged and supported the introduction of new technology into the college classroom. Through the generosity of the Andrew W. Mellon Foundation, the ACS has been able to make available a number of Teaching with Technology Fellowships for qualified faculty and staff members at ACS institutions. These fellowships provide a $2500 stipend for the development of teaching materials or other curricular enhancements in which technology plays a key role and which have potential application for other ACS institutions.

This program has resulted in a body of materials created for use in the music curriculum in member institutions. Among the materials in the archive (http://database.acs.southwestern.edu/faculty/) are:

1. an online music appreciate course with samples of audible scores
2. a collection of animations demonstration concepts in music form and analysis
3. a large site of interactive music history review materials
4. a collection of music class web sites containing a wide variety of teaching resources.
5. a site devoted to the history and construction of the pipe organ

Following is a further introduction to several of these resources:

Knowing the Score: Music and Electronic Media

http://itw.sewanee.edu/Music111/
Professor Stephen Miller
University of the South
Email: smiller@sewanee.edu

In his introduction to Music 111: Knowing the Score: Music and Electronic Media, Professor Miller states, "This course allows students to develop musical literacy and, concurrently, to explore the ways electronic keyboards and computers communicate. Participants use a new technique for learning musical notation that combines the aural experience of music with its visual representation on the computer monitor. Hands-on experience with computers and piano keyboards is important, as students learn the rudiments of music making and notation, composing their own melodies and rhythms. Basics of MIDI -Musical Instrument Digital Interface, the communication protocol between musical instruments and computers - will be covered. This course follows a historical progression, examining a few representative masterpieces of Western classical music. Initially, early music and its relatively simple melodic organization provide students with an entre to notation, but as literacy skills increase, more

recent compositions come under analysis, culminating in nineteenth - and twentieth-century works."

The course is centered around a list of representative works in the history of western music (http://itw.sewanee.edu/Music111/Works/works.html). Each work is given a page with historical commentary and an audible score. The students follows the score while hearing it performed in an accompanying MIDI file. The important points of interest are highlighted in red at the time the student hears them played. The result is that students begin to gain score reading skills even if they have no prior sight reading experience. The exercise has provides a clear graphic representation of texture, melodic contour, and rhythm.

Organ History : The Pipe Organ from its Origin Through the Twentieth Century
http://panther.bsc.edu/~jhcook/OrgHist/pageone.htm
Professor James H. Cook
Birmingham-Southern College
Email: jcook@bsc.edu
Home Page: http://panther.bsc.edu/~jhcook/

Professor Cook explains the purpose of the site, "It is meant to fill a need for a multi-media resource on the organ and its history, and is intended for useby undergraduate organ students who have little or no experience with the instrument. There are two primary sections:
1.The Organ and How it Works. This section presents information about the instrument as it is found at the endof the twentieth century. The goal is to include enough technical information to answer most questions about the instrument, without introducing qualitative judgements or historical development.
2.History. This section presents an overview of the history of the instrument. It concentrates on instruments that should be of the most interest and usefulness to the undergraduate organist: organs associated with composers of the music the student will typically encounter during his or her first three or four years of study.

Additionally, there is a searchable glossary of terms associated with the organ."

This site contains numerous photographs, Quicktime movies, animations, and sound files. This is particularly valuable for students because the organ, unlike other musical instruments, is entirely dependent on equipment that is unseen by both the performer and the audience.

Gradus ad Parnassum: Exercises in Music History
http://gray.music.rhodes.edu/gradus/portal.html
Professor Patricia Gray
Rhodes College
Email: gray@rhodes.edu
Home page: http://gray.music.rhodes.edu/musichtmls/faculty/gray.html

This site is designed to help music history students understand basic concepts of the evolution of western music and to prepare students for music history placement tests. The interactive quizzes were constructed by music faculty from Rhodes and Millsaps, two ACS member institutions. Other music faculty are encouraged to add quizzes in their areas of specialty thus insuring that the resource will be enriched by a variety of perspectives.

Flash Animations for Teaching Music History
http://gray.music.rhodes.edu/musichtmls/flash/flash.html
Professor Patricia Gray
Rhodes College
Email: gray@rhodes.edu
Home page: http://gray.music.rhodes.edu/musichtmls/faculty/gray.html

Musical forms continue to evolve over time. Animations were created to show these transformations. The effect is to point out the volatile, ever-changing nature of music. Animations can illustrate these points to students in an engaging and sometimes humorous way.

Conclusion

As part of its ongoing effort to foster the use of technology in the music curriculum, the Associated Colleges of the South will sponsor a four day workshop in the July 5-9, 2000 at the new ACS Technology Center at Southwestern University in Georgetown, Texas. Music faculty and IT staff will be able to explore a variety of software for the creation of class materials. In addition, members will have the opportunity to discuss the challenges of implementation. Ideally, this workshop will result in increased sharing of material and ideas and will also broaden interest in the music departments of member institutions.

Building a Supportive Online Instructional Environment for Reluctant, Apprehensive, and/or Under-Prepared Learners

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ABSTRACT

Focus is on designing supportive and self-explanatory sites. Presenter's software of choice is Blackboard's Courseinfo. Student-centered site architecture eliminates confusion and frustration. Planning for student needs, fostering community, and encouraging reliance on the site eases student reluctance to engage the medium and work effectively within it. Points are illustrated with a site created using Blackboard's Courseinfo software. Topics:

Site Architecture: design features of effective sites

Site efficiency: Use of linking & repetition to achieve clarity & coherence

Serving student needs: Tricks for anticipating & serving student needs

Building community: Fostering enthusiasm, participation

Reliance: Encouraging reliance on the course site

I will discuss the topics listed below while providing illustrations from a Courseinfo site I use in the teaching of English121: Technical Writing. This "paper" is not written in standard discursive format but is presented as an annotated listing of points to consider when designing an instructional site. The topics discussed are as follows:

1. **Overall site architecture**
2. **Site Efficiency**
3. **Serving Student Needs**
4. **Building Community**
5. **Encouraging Reliance**

Designing an instructional site for the first (or even the second) time can feel like an overwhelming task. Site design requires an instructor to take many factors into consideration and to learn many new skills. To ease the anxiety instructors often feel when faced with the complexity of designing an instructional site, I have ranked the points made in descending order of importance or urgency. Those considerations or tasks an instructor must take into consideration or achieve from the outset are presented first within each section. Those items an instructor can regard as goals to be achieved at a comfortable pace are listed last.

OVERALL SITE ARCHITECTURE

Work with the right equipment. **A 14-inch monitor will blind you. (I went through 2 contact upgrades before I learned this!) If you can count to 100 before PhotoShop loads, get a faster machine.**

Internalize the fact that the web site is NOT the face-2-face classroom. This means making an effort to avoid thinking of this new online media in terms of the old media it resembles or replaces. The traditional media of teaching are print and lecture.

However, simply loading printed material onto a web site does not constitute effective online teaching. Do not build instructional units on the assumption that students will remain on the site and read documents of even moderate length. Also, the online environment does not offer you the captive audience that a lecture setting offers. You may be able to create coherence or foster interest in a topic in the classroom by sheer dint of personality, but online, you must rely upon the design of your instructional units and the manner in which the material is presented and integrated to foster interest and ensure engagement.

Lastly, the computer monitor most resembles the familiar medium of television; however, mimicking characteristics of this medium in the display or design of your site will engender a "television" response in your students. An instructional site, in other words, is not and should not resemble a television show. Colors and graphics may create a lively and appealing visual interface, yet over-reliance on animations, film clips, et cetera, may evoke a passive, "wow, cool" response in students and not genuine intellectual engagement.

To avoid repeating the lecture, print or "show" method of delivery in your instructional site, become aware of both your teaching style and your learning style. An awareness of your own and alternate teaching and learning styles will enable you to exploit the strengths and to avoid the weaknesses of each style. An excellent online resource for diagnosing your own teaching and learning style is provided by the Center for Teaching and Learning at Indiana State University
http://web.indstate.edu/ctl/styles/tstyle.html

Leave the classroom on the installment plan—if possible. If at all possible, design and teach web-assisted, semi-online, or web-intensive classes before making the leap to an entirely online method of delivery. If you need support in convincing your administration of the wisdom of retaining face-2-face contact in the teaching of undergraduates, consult the recent study released by the University of Indiana
(online at http://www.vpaa.uillinois.edu/tid/report/tid_report.html). This year-long, multi-campus, cross-disciplinary study endorses the use of fully online methods of instruction for adult/graduate students but questions the effectiveness of the same for traditional undergraduates.

Divide & conquer the 10- or 15-week beast by breaking the curriculum into short instructional units. I kid you not when I say that this will save your sanity—and your students' sanity!

Plan the overall design of your class by following this procedure:

1. Gather up and account for the sum total of information, concepts and skills you want your students to possess by the end of your class.
2. Break this sum total down into very small "instructional units" (defined in the next point, below).
3. Deliver your course material in terms of these very small and product-oriented "units."
4. When in doubt, err on the side of making a given unit too small rather than too large.

Make each instructional unit task oriented and assign it a definite outcome. The idea is not to turn you into a bean counter but to keep you and your students sane. To launch amorphous, open-ended projects, you need mature, motivated students, and you, yourself, must be practiced at orchestrating large open-ended projects. Save such projects for later, and start with a series of instructional units that involve, say a brief reading, a bit of independent research or thinking, and some task that produces a "product" that will be submitted to the coursesite in some fashion.

1 Instructional Unit = 1 concept + 1 or 2 reading(s) + 1 task + 1 product

Working with small instructional units will help you to keep straight all the various submissions of work you receive from students—each of whom is working on his or her own timetable.

Contemplate the "Rhythm" of online work for you and your students and define an average "instructional lifecycle" you are comfortable with. The "instructional lifecycle" can be defined as the time it takes for an assignment to play out from start to finish in an online, asynchronous environment. I find it to be about two weeks and to involve the following stages:

1. I post an assignment on the site.
2. All students "receive" the assignment.
3. All students execute the assignment.
4. All students submit or post the product of their work.
5. I retrieve all student work.
6. I "process" all student work and post my response or feedback to the site.
7. All students avail themselves of the response and achieve closure on the instructional unit.

The trick is that you may have as many work schedules to accommodate as you have students. Moreover, you will have multiple instructional units playing themselves out simultaneously. Orchestrating this may be as difficult as getting a large group to sing a song in rounds. Having short, well defined, and product-oriented instructional units will help you to avoid chaos.

Build a firm but very simple structure of mini-deadlines into the course. Giving your students the entire quarter or semester to complete their work is asking for trouble and setting your students up for failure. You do not rob students of the flexibility of asynchronous learning by placing 3 or 4 "benchmark" points in the curriculum by which students need to have completed a defined percentage of the work. Professors who give their online students complete freedom have high attrition rates in their classes.

Employ alternative delivery methods for web-unfriendly media. Students simply will not read long passages of text online. Period. Write your "copy" for a site page then find some way to make it about 50% shorter. Online reading is vastly different from reading offline. If you have long handouts, post them but tell students the material is available in their digital drop boxes, on diskette / CD-Rom, on the campus server in a read-only folder, or even available for pickup in paper form.

Keep it simple. Until you are practiced at online teaching, do not plan any large collaborative online projects, instructional units involving 3 or more students to perform a task in unison or even on time, group grading, or elaborate peer-review schemes.

Learn enough HTML to build and manipulate basic pages with graphics. Also, learn to use a simple straight-HTML authoring software, such as HomeSite + Dreamweaver (or even just FrontPage and Netscape Composer) as a timesaving way of creating attractive pages. You can use your skills to create an attractive animated course banner and to spruce up all aspects of the site with graphics and

eye-pleasing formatting.

Load pages directly onto the site. Loading pages directly means that a student will be able to view the page / folder content directly in a frame without having that space further constrained by some sort of viewer or program—such as Word or Acrobat. By loading all your course content as word files to which students link, you force students to click through additional layers and you convey the attitude that the instructional site is noting more than a glorified document dump.

Take an online course. In fact, take several! You will learn from the good ones what works & from the bad ones what to avoid doing in your own classes

SITE EFFICIENCY

Establish & repeat visual / informational patterns. **This means situating like information in like places and establishing a visual and informational "style" for various types of site content. For instance, a "Task Summary" might have its own distinctive design (color, graphic, font style) and be located predictable spot (at the top of every instructional unit folder) *and* follow a predictable pattern of information feed (a list of readings, followed by a list of tasks, for instance). In short, create patterns with color, signature graphics, location, font and content in order to reinforce the nature of a site feature and to assist students in identifying a given site feature.**

Craft predictive & descriptive titles. Time spent in crafting precise and predictive titles for instructional units, folders, documents, et cetera, is time well spent. Short may be elegant but ambiguous. Never forget to compensate for the fact that you already know precisely what you mean!

Plan for a "deep" site. Create several layers of folders before displaying content directly on the screen. Design your site to be "scalable" by designing in several layers from the beginning—even if you don't have the content to fill them at first. A "deep" site makes it possible to display *all* the options or choices contained in a given layer without scrolling down.

Repeat the structure of your site in your backup-folder system. It is a given that you need to keep current backups of every page you upload to an instructional site! Establishing a folder system that mimics the sections and sub-sections of your site will help you to locate page backups.

Make instructional units one-stop shops. (See "linking" under Serving Student Needs)

Edit and re-edit all instructions/directions until they are ultra short and ultra clear. I am a technical writer and even I find this a constant challenge. You will find that there are as many ways to misinterpret instructions you write as there are students doing the interpreting! Remain aware that you have but one shot at conveying instructions clearly and that online you quickly reach the point of "less is more." This means that more language quickly results in less clarity. Use short sentences and simple language. Also, when students explain why a given assignment or passage is confusing, take notes and fix the offending passage!

Avoid dates everywhere except in the syllabus & in announcements. Do not date your instructional units. You may need to change course or otherwise adjust the syllabus midway through the class, and changing the labels on the instructional folders or units will confuse everyone.

Count on the technology to fail. Do this because it WILL fail at some point. Prepare a folder for each instructional unit into which you place photocopy-ready printouts of *everything* you or your students need from the coursesite. Build some grace time into all deadlines, and have five or six well-publicized means by which students may submit work to you. These means may include the following: Discussion Board posting; Digital Dropbox; file attachment to an e-mail; fax; U.S. postal service; on-campus mailbox; drop spot, such as under your door; on-campus meetings, by arrangement.

Put your e-mail link into every document containing instructions. Accompany this link with an invitation to ask questions or seek clarification. Often, you can turn your response to one student into an opportunity to e-mail the entire class with useful information. Remember, that frequent class-wide e-mails are a powerful means to foster a sense of community online.

Build document templates for standard "site features." This is easy to do, for instance, in Dreamweaver. Using page templates will help you to achieve the repetition of information and design patterns described above.

SERVING STUDENT NEEDS

Tell students what to expect. Create an introductory module or unit in which you discuss the challenges, benefits, advantages, and pitfalls of learning online. Create (and review during any initial face-2-face meeting you may have) a basic skills list for working effectively online.

Give students a hardcopy of EXPLICIT initial directions. These directions should cover everything they need to do or know during the first week of class. Mail it to them if necessary.

Use internal linking. You may not feel comfortable at first with writing the HTML needed to insert internal links, but place this on your "list of goals." (Many authoring softwares automate this task.) If you can handle simple HTML, enrich your site with internal links. For instance, link every assignment line on your syllabus to the files or folders needed in that assignment. After any mention of a resource on the site (or elsewhere) insert a link to that resource. Students will feel as if they always have at the ready whatever they need.

Create a generic logon. Know that each term one or more students will forget their logons and/or passwords. Don't risk loosing a student because he or she could not access the site to let you know that he or she could not access the site! If you do not have enrollment capabilities, get your online administrator to create a generic "jane doe" logon.

Access your site and test advanced features from select computers across campus and from computers off campus. Just because your site runs smoothly from your desktop computer doesn't mean it runs smoothly on the computers in student labs or on the computer in the local public library. You may be shocked to discover that some content times out when squeezed over a 56K modem or that load times are too excessive to be practical. Also access your site from the "other" platform and "both" browsers. Don't wait until you have built your entire site to discover display problems.

Write your own simple directions for performing basic site tasks. Students may have access to an online manual, but this does not mean they will consult it. When asking students to utilize a site feature, such as the Discussion Board, the Chat, or a Digital Dropbox, include in the instructional unit folder directions for how to negotiate the software. Another option is to link to pertinent sections of the online manual or to other WWW resources.

Provide multiple sources of critical materials. Place digital copies of all site documents in student drop boxes and a read-only folder on the campus SERVER. Also make them available on disks and/or CD-ROMs that you place on library reserve. Utilize whatever resources you have to ensure that your students will never be unable to access crucial course materials.

Get an alternate (non-campus-server-dependent) e-mail account. I am sure the server never crashes at your institution! Nonetheless, make sure you can send and receive messages even if the unlikely occurs. Also, set your e-mail to "auto-respond" when you are truly unavailable.

Provide many ways for students to submit work to you. In many ways the business model prevails in the world of online instruction: make it as easy as possible for your "customer" to do what you want him to do. Examples of means by which a student can submit work are as follows: Discussion Board; Digital Dropbox; file attachment--to an inside & outside e-mail account; fax; U.S. postal service; on-campus mailbox; drop spot, such as under your door; and on-campus meetings, by arrangement.

PACK your external links section. Make as many resources available to your students as possible. Provide resources on topics related to the content of your course. Doing so establishes an ethos of curiosity and exploration.

Forget on-line office hours, but *live* on your e-mail. One of the most powerful things you can do to make students feel supported is to talk to them. Try it—regularly—and you will discover the most amazing thing: they will talk to you as well!

Give realistic deadlines. Just because you can access the site readily from your desktop does not mean that *all* your students can do the same. I began with a posting deadline of 9 hours before face-2-face meetings. The 9 became 6. Now I take postings as close to the wire as I can manage!

Educate support & IT personnel about your students' needs. Also, be prepared to run interference for them if they have trouble getting the technical support they need.

Scope out the *fast* computers on campus. Then tell your students where to find them and/or when they are available.Give them links to the online manual.

Provide plug-ins & software. Blackboard maintains a nice library of plugins. Link to it from your site at http://company.blackboard.com/Support/CourseInfoStudent/plug-ins.html

Replace links to support documents on external sites with full-text documents of your own making.

Create your own tutorials.

Create your own self-tests to support your tutorials.

Get funding for a Supplemental Instructor or Lab Assistant.

BUILDING COMMUNITY: FOSTERING ENTHUSIASM, PARTICIPATION

Send class-wide e-mails weekly.

Require some sort of weekly posting or contact with the site. **Build this into your course requirements. Once a student has lost contact with the class for a week, that week is more likely to turn into two—then three. "Class feel" grows cold quickly and must be fostered assiduously. If you have face-2-face meetings, bring marked-up printouts to class meetings and**

comment on them (i.e., offer praise & encouragement) publicly.

Post updates and/or reminders two or three times a week. Make sure that you have some sort of new content on your "splash" page every few days. Students may assume that nothing is "happening" in the class if nothing appears to change from week to week. The opposite, of course, is also true.

Keep instructional units product-centered but make products small / achievable. Set your students up for success. This is particularly important during the first few weeks of the class.

Post student work with comments to the site. Then place a linked announcement of the same on the "splash" page.

Have students RESPOND (with quotes!) to the postings of others. Wait until you have your online "sea legs" to do this, but keep it in mind as a powerful means of encouraging a class esprit de corps.

Use collaborative groups (no more than three!). The online classes with the strongest sense of community employ some form of collaborative learning. Managing these projects requires skill, but the skill is well worth developing. Have each group select a group "Leader." Have students generate a class activity (for instance, by formulating questions for the Discussion Board) and moderate the ensuing activity.

Create and use thumbnail graphics of your students. If you have student homepages or if you can take digital snapshots of your students during an initial meeting, create a library of thumbnails that you can insert into e-mails and chats to put a "human face" on online interactions.

ENCOURAGING RELIANCE ON THE COURSE SITE

Make your site a one-stop shop. If your students need it, make sure it is on the site or reachable via the site—preferably via linking.

Test *every* site feature you add. Then go back three months later, and test each feature again. Nothing will lower a student's confidence in and reliance on the site faster than dead links.

Have all course material up there to preview & to review.

Put student SCORES on site—even in a basic table.

Provide samples of completed assignments.

Jettison the text. Link (with permission) to online texts or to sites that provide the same information. When needed, fill out the resource with documents of your own. However you achieve a text-free class, the effect will be the same: students will rely on the site.

Provide representative self-tests.

Build a rich site & keep it up to date.

Make a "game" of extra credit. If you can obtain a bit of "personal" space on your institution's online server, you can do all sorts of fun things. You can hide extra credit assignments deep in the "additional resources" corners of the site and reward students for finding and completing them. This may sound juvenile, but I find that students love hunting out these assignments. Your goal, of course, is to have them do the supplemental reading, thinking, and learning.

Algebra, Trigonometry, and *Mathematica*

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Abstract

Algebra, Trigonometry, & *Mathematica* (AT&M) is interactive courseware for algebra and trigonometry or for precalculus. AT&M is appropriate for self-paced individualized instruction in a distance-education format and for group instruction in a computer laboratory environment. A distinguishing feature of AT&M is its incorporation into the Help Browser of *Mathematica*, which allows for navigation through the courseware based on hyperlinks. With AT&M, the student is encouraged to (and is able to) ask the question "What if ..?", and find out immediately.

Overview of AT&M

Talking isn't teaching.
Listening isn't learning.

(Motto of the Interactive Mathematics Text Project)

Algebra, Trigonometry, & *Mathematica* (AT&M) consists of interactive courseware written in the form of *Mathematica* notebooks. This approach allows easy integration of graphical, numerical, and symbolic aspects of key mathematical concepts. AT&M emphasizes an exploratory approach; the student is encouraged to (and is able to) ask the question "What if ..?", and find out immediately. Using the power of *Mathematica* to handle calculations that would be difficult or impossible to perform by hand, encourages individual discovery of patterns; one example becomes as many examples as the student desires. Furthermore, the student can insert explanations and comments at will, and can maintain a permanent record of investigations made. Students are actively engaged in the learning process, and encounter a strong emphasis on applications, real-world data, and scientific literacy. Writing is an important component of AT&M; most exercises require an explanation in English of the process.

Most of the student's time is spent actively solving problems. Hyperlinks facilitate reference to needed earlier concepts. A distinguishing feature of AT&M is its incorporation into the Help Browser of *Mathematica.* The *Mathematica* Help Browser is an environment that permits navigation by the simple clicking on links to the different parts of the AT&M materials, as well as to all of the *Mathematica* help files. This makes browsing through the AT&M materials similar to surfing on the web. Students learn to use *Mathematica* on a "just-in-time" basis, and do not need to memorize complicated details of *Mathematica* syntax; built-in palettes and buttons are available for often-used items, and code can be copied, pasted, and edited as needed. The focus is on the mathematics, not on *Mathematica* itself.

The AT&M approach is appropriate for self-paced individualized instruction by motivated students in a distance-education format, and for group instruction in a computer laboratory environment. AT&M offers enough content to satisfy requirements of a five-semester-credit hour course at either the beginning college level, or for secondary students.

AT&M requires *Mathematica* version 3 or higher, and can be used on either a Macintosh or a Windows

platform..

Every example is many examples!

AT&M stands for *Algebra, Trigonometry and Mathematica*. With AT&M, the student learns mathematics mostly by **doing** mathematics, rather than just by reading about it.

We call this an "interactive" approach, where the interaction is between the student and mathematics. The vehicles that help make this interaction possible are the computer, the student's brain, and *Mathematica*.

One of the main differences the student experiences with AT&M is this: **Every example is many examples**.

In a traditional printed textbook, the student gets to read the examples that the authors chose, and that's that. Maybe they have one example, maybe they have several, but in any case the student is limited to the examples **the authors chose**.

With AT&M, **the student** is in control. Whenever the student goes through an AT&M example, he or she has the power to go back to that example and change it: change the numbers, change the variables, change the functions. This is painless to do because the student can "cut and paste" just the changes desired.

With AT&M, every example is many examples. The point of doing many examples, however, is not just to take up time or to keep the student off the streets. Doing many examples also is not the same as "drill and practice". Almost every example and exercise in AT&M has behind it **a** pattern that it should illustrate. With AT&M, the student can change the example as often **as** he or she needs, **until the pattern is clear in the students mind**. Sometimes the student will see the pattern immediately. Sometimes it will take a while. Different people will need different numbers of examples at different times. The point is, there should be a pattern, and the student can (quickly and easily) check out examples until the pattern becomes clearer.

Working with AT&M

The AT&M course is broken down into six chapters, and each chapter has several sections. Each section consists of the main text, exercises, and "Test your understanding" questions.

The main text presents new mathematical concepts, and gives examples and exercises complete with solutions. The "Exercises" comprise examples and questions without answers. The student will be able to work some of the exercises without any help, except perhaps *Mathematica* for grungy calculations (*Mathematica* is **always** available for grungy calculations). Other exercises will be harder, or may require tools the student doesn't already have. If the student encounters an exercise that stops him or her cold, then he or she should check over the part of the corresponding section in the main text. Often the student will encounter a **link** that points in the appropriate direction.

Finally, the "Test your understanding" section contains questions that the student should be able to answer without the help of *Mathematica*. These questions address basic concepts and reinforce a reasonable level of hand manipulative skills.

Each student using AT&M must have his or her own computer: watching someone else move the mouse and hit the keys is not effective learning. However, we strongly encourage students to discuss the problems with each other.

Is the AT&M material equivalent to a conventional textbook?

AT&M can be used to teach any algebra, algebra and trigonometry, or precalculus course in a college or high school setting. For several years the authors have tested AT&M in a five-credit-hour College

Algebra and Trigonometry course at Western Kentucky University. These classes use the AT&M materials as their only text. Students meet in a computer laboratory where the traditional lecture is replaced by individual assistance and guidance. AT&M is also used by off-campus students who take College Algebra and Trigonometry as a distance-learning course. These students communicate with their instructors via e-mail and send in their homework electronically for grading.

How can AT&M be used to teach in a classroom?

AT&M can be used to teach any algebra, algebra and trigonometry, or precalculus course.

An AT&M course is designed to be **interactive**, which definitely includes, and emphasizes, interaction between the student and *Mathematica*. Interaction between the student and the instructor also is crucial, as is interaction among the students themselves. In the classroom, students can be encouraged or required to work together in groups at least part of the time.

While the role of instructor as "Dispenser of Truth" is de-emphasized, and traditional lectures should be minimized or eliminated, the instructor is vital to the success of the student and, therefore, of the course.

For several years earlier versions of AT&M have been tested in a five-credit-hour College Algebra and Trigonometry course at Western Kentucky University by the authors. In this format, students work as much as 90% of the time in a computer laboratory. How much students work in the computer laboratory depends on the style of the instructor. Some sections of AT&M require extensive direct involvement of the student with *Mathematica*. In other sections of AT&M, the preferences of the instructor may be decisive. Where time in the computer laboratory is limited, the students may meet in a traditional classroom. Under these circumstances, the most appropriate format is an open class discussion, guided by the instructor.

Discussion by the students, perhaps in response to questions posed by the students (or taken from the "Test your understanding" sections) is preferable to an "instructor asks, students respond" mode. However, "instructor asks, students respond" is preferable to a traditional lecture mode in which the instructor tells the students what they should know, and the students passively take notes about those things.

How can AT&M be used to teach via the internet?

A five-credit-hour College Algebra and Trigonometry course over the internet is offered at Western Kentucky University by the authors. In this format, a student must have his or her own computer and a personal copy of *Mathematica* installed on the computer; the student is mailed a set of installation disks for AT&M. The student completes about one homework set per week and sends it to the instructors as an e-mail attachment. For questions the student e-mails the instructors or visits a web site with commonly asked questions. This approach works successfully provided the student possesses sufficient motivation and self-discipline.

The role of graphing calculators

Graphing calculators are handy devices. Many things that *Mathematica* does in AT&M can be done by a graphing calculator. However, many other things in AT&M **cannot** be done by a graphing calculator, and *Mathematica* is necessary.

As technology improves, the things that a graphing calculator can do will include more and more of the things that *Mathematica* can do. In fact, these calculators will become more and more like laptop computers. In time, it will be harder to distinguish between a small computer and an advanced graphing calculator.

We strongly encourage using a graphing calculator along with the computer.

How did AT&M get started?

Barry Brunson and Claus Ernst have been developing AT&M since 1992 at Western Kentucky University (WKU). The development is an ongoing project since, unlike a traditional text, AT&M is software that has to change with new versions of *Mathematica*. The initial seed of AT&M was made possible by a grant from the National Science Foundation which funded a computer laboratory in the Department of Mathematics. In 1993 AT&M became nationally recognized through the Interactive Mathematics Text Project (IMTP), which selected Barry as an IMTP "Developer". IMTP was funded by grants from IBM and the National Science Foundation and administered through the Mathematical Association of America. The purpose was to improve the teaching of mathematics by encouraging development of courseware for interactive learning.

The first truly interactive mathematics courseware is Calculus&*Mathematica*, which was developed by Bill Davis, Horatio Porta, and Jerry Uhl at Ohio State University and the University of Illinois. This was the prototype that led to the Interactive Mathematics Text Project grants. The AT&M authors gratefully acknowledge the significant influence of Calculus&*Mathematica* on the development of interactive learning.

Evaluation

We have used AT&M in one section of the five-credit hour College Algebra and Trigonometry course at WKU each semester for the last several years, and a handful of students have taken the course in a distance learning environment. The number of students involved so far is too small to support meaningful comparative statistical analysis. However, anecdotal data from our experience suggest:

• Grade distribution tends to be slightly higher than in traditional sections of College Algebra and Trigonometry that we have taught in the past.

• Some students have difficulty adapting to the nontraditional format, and switch to other sections, or say they wish they had switched. However, others thrive with AT&M, including some who had made earlier unsuccessful attempts in a traditional course.

If the instructor of a calculus course, for instance, heavily emphasizes hand manipulative skills, then an AT&M student may be at some disadvantage. In general, however, we expect that AT&M students will tend to do no worse in hand calculation, and to do better conceptually, than students in a traditional course. This is consistent with the experience of the Calculus&*Mathematica* project. For instance, see Kyungmee Park and K. J. Travers, CBMS Issues in Mathematics Education, Volume 6, pp 155-176.

We eagerly solicit colleagues interested in using AT&M elsewhere.

Converted by *Mathematica* March 10, 2000

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